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Thermodynamic Properties of a Geothermal Working Fluid; 90% Isobutane-10% Isopentane

J. S. Gallagher, D. Linsky, G. Morrison, and J. M. H. Levelt Sengers

National Bureau of Standards

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ABSTRACT

We present tables of thermodynamic properties, and dew and bubble properties, of a mixture of 90 mol % isobutane and 10 mol % isopentane, a working fluid in a binary geothermal power cycle. The tables are generated by a formulation of the Helmholtz free energy, in which the mixture properties are mapped onto the known properties of pure isobutane by means of the principle of generalized corresponding states. The data base for the Helmholtz free energy formulation is new. We report data obtained in three different apparatus: critical-line and isopentane vapor pressure data obtained in a visual cell; vapor-liquid equilibria data obtained in a mercury-operated variable-volume cell; and pressure-volume-temperature data for the 90 mol % - 10 mol % mixture obtained in a semi-automated Burnett-isochoric apparatus. The principles of the methods, and estimates of the reliability, are discussed and all experimental data are compared with the surface. The results are tables of specific volume, enthalpy, entropy, specific heat and density and temperature derivatives of the pressure at 10 K temperature increments from 240 to 600 K along isobars from 0.01 to 20 MPa. Separate tables are prepared from the dew and bubble properties of the 90-10 mixture.

Estimates of the effects of isomeric impurity of isobutane are given in graphical form.

1. INTRODUCTION

The purpose of this report is to provide the data base necessary for efficient operation of a prototype binary geothermal power plant constructed under auspices of the U.S. Department of Energy in Heber, CA. The working fluid in this plant is a mixture of 90 mol % isobutane and 10 mol % isopentane, with up to 5 mol % contamination of each of the components, primarily by isomers. The plant operates in an in-part supercritical Rankine cycle between 300 and 460 K. The locations of the dew and bubble curve are extremely important to know, so that no liquid forms when the fluid expands in the turbine [K1980a]. For this reason, it is necessary to construct a thermodynamic surface for the mixture at all compositions: the data base cannot be limited to the 90-10 mixture alone. On the other hand, obtaining the PVT and VLE data for the mixtures at many compositions would be too big a task. As a consequence, we have adopted a two-pronged approach, where the thermodynamic surface was constructed on the basis of a theoretical, generalized-corresponding-states model [L1968, R1969a] and fine-tuned with respect to experimental VLE data taken in the range of 288-328 K, and PVT data taken in the range of 360-430K, the latter only for the 90-10 mixture. The corresponding-states model was described in previous publications [G1984, 1986, 1987] and is only summarized here. A new set of parameters is given, characterizing the best fit to all available data. The VLE and PVT data obtained for the mixture are reported. The experimental phase boundary data are compared with those derived from the "best" surface. The VLE, PVT and enthalpy data, the latter from another source [K1979], are compared with the surface. A special effort has been made to calculate the effect of

impurities on the thermodynamic properties and on the location of the phase boundaries.

Tabulations are presented of the one-phase thermodynamic properties volume, enthalpy and specific heat; and the pressure derivatives with respect to density and temperature, all as isobaric functions of temperature. In addition, we tabulate the dew points values of the thermodynamic properties for the 90-10 vapor mixture, and its coexisting liquid. Conversely, we tabulate these properties for the 90-10 liquid at the bubble points, and for its coexisting vapor.

All tables are given in SI units. Supplementary tables are given in British units. A Fortran computer program is added, that generates values of thermodynamic properties along isobars in a choice of systems of units.

2. GENERALIZED CORRESPONDING-STATES FORMULATION

A. Reference: Pure Isobutane

The Helmholtz free energy $A(\rho, T)$ of pure isobutane, as a function of temperature T and molar volume V, serves as the starting point for our formulation for the mixture properties. It can be written as [W1982, W1983, G1984, G1986]:

$$A(T, V) = A_0(T, V_0) + A_1(T, V) + A_2(T, V) + A_3(T, V) \qquad (1)$$

Here $A_0(T, V_0)$ represents the ideal-gas contribution to the Helmholtz free energy at a reference molar volume V_0, A_1 and A_2, the so-called base functions, which contains the Carnahan-Starling expression for the repulsive term, and a simple second-virial type attractive term, as formulated by Haar et al. [H1984]. The term A_3 is a sum of residual terms, powers of temperature and volume, that make up for the difference

between the experimental pressure and that defined by the base function. We use the Helmholtz free energy function in dimensionless form. Dimensionless properties are represented with a bar over the symbol, and the reduction parameters with an asterisk. Thus, we have:

Primary reduction parameters for

Temperature: $T^* = 407.84$ K

Density: $\frac{1}{V^*} = \rho^* = 3879.6$ mol/m^3 (2a)

Pressure: $P^* = 3.6290$ MPa

Derived reduction parameters for

Thermodynamic energy function: A, G, H and U

Helmholtz free energy: $A^{**} = P^*/\rho^*$

Entropy: $S^{**} = P^*/(\rho^* T^*)$ (2b)

Speed of sound: $a^{**} = (P^*/(\rho^* M))^{1/2}$

Physical constants

Molecular weight: $M = 0.0581234$ kg/mol

Gas Constant: $R = 8.31441$ J/(mol K) (2c)

$R^{**} = R/S^{**}$

The dimensionless forms of thermodynamic variables and properties are defined as follows:

Temperature	$\bar{T} = T/T^*$	
Pressure	$\bar{P} = P/P^*$	
Density	$\bar{\rho} = \rho/\rho^*$	
Volume	$\bar{V} = V \cdot \rho^* = 1/\bar{\rho}$	
Helmholtz function	$\bar{A} = A/A^{**}$	
Gibbs function	$\bar{G} = G/A^{**}$	(3)
Internal Energy	$\bar{U} = U/A^{**}$	
Enthalpy	$\bar{H} = H/A^{**}$	
Entropy	$\bar{S} = S/S^{**}$	
Heat capacities	$\bar{C}_v = C_v/S^{**}$	
and	$\bar{C}_p = C_p/S^{**}$	
Speed of Sound	$\bar{a} = a/a^{**}$	

All extensive thermodynamic properties are taken per mole. The dimensionless thermodynamic properties are derived from the dimensionless Helmholtz free energy $A(\bar{V}, \bar{T})$ by means of the following relations:

$$
\begin{aligned}
\bar{V} &= \bar{\rho}^{-1} \\
\bar{P} &= \bar{\rho}^{\,2}(\partial\bar{A}/\partial\bar{\rho})_{\bar{T}} \\
(\partial\bar{P}/\partial\bar{\rho})_{\bar{T}} &= 2\,\bar{P}/\bar{\rho} + \bar{\rho}^{\,2}(\partial^2\bar{A}/\partial\bar{\rho}^2)_{\bar{T}} \\
(\partial\bar{P}/\partial\bar{T})_{\bar{\rho}} &= \bar{\rho}^{\,2}(\partial^2\bar{A}/\partial\bar{\rho}\partial\bar{T}) \\
\bar{S} &= -\,(\partial\bar{A}/\partial\bar{T})_{\bar{\rho}} \\
\bar{U} &= \bar{A} + \bar{T}\,\bar{S} \\
\bar{G} &= \bar{A} + \bar{P}/\bar{\rho} \\
\bar{C}_v &= -\,\bar{T}(\partial^2\bar{A}/\partial\bar{T}^2)_{\bar{\rho}} \\
\bar{C}_p &= \bar{C}_v + (\bar{T}/\bar{\rho}^{\,2})\,(\partial\bar{P}/\partial\bar{T})_{\bar{\rho}}^{\,2}\,/(\partial\bar{P}/\partial\bar{\rho})_{\bar{T}} \\
\bar{a} &= [(\bar{C}_p/\bar{C}_v)\,(\partial\bar{P}/\partial\bar{\rho})_{\bar{T}}]^{1/2}
\end{aligned}
\tag{4}
$$

The dimensionless Helmholtz free energy (1) takes the form

$$
\bar{A}(\bar{T},\,\bar{V}) = \bar{A}_0(\bar{T}) + \bar{A}_1(\bar{T},\,\bar{V}) + \bar{A}_2(\bar{T},\,\bar{V}) + \bar{A}_3(\bar{T},\,\bar{V}) \quad , \tag{5}
$$

with

$$
\bar{A}_0 = (A_{00} + A_{01}\bar{T})\,\ell n\,\bar{T} + \sum_{i=2}^{8} A_{0i}\,\bar{T}^{\,i-4} + A_{09}\,\bar{T}\,\ell n(e^{x} - 1) \quad , \tag{6}
$$

where $x = x_0/\bar{T}$;

$$
\bar{A}_1 = \bar{\rho}\,\bar{T}\left[A_{10} + \frac{A_{11}}{\bar{T}} + \frac{A_{12}}{\bar{T}^3} + \frac{A_{13}}{\bar{T}^5} + \frac{A_{14}}{\bar{T}^{10}}\right] \quad ; \tag{7}
$$

$$
\bar{A}_2 = A_{20}\,\bar{T}\left[\ell n\left(\frac{\bar{\rho}}{1-y}\right) + \frac{3}{2(1-y)^2} - 4y\right] \quad ,
$$

$$
\text{with } y = \bar{\rho}\left[y_0 + y_1\,\ell n\,\bar{T} + \frac{y_2}{\bar{T}^4} + \frac{y_3}{\bar{T}^8}\right] \quad . \tag{8}
$$

$$\bar{A}_3 = \sum_{i=1}^{8} \sum_{j=1}^{6} B_{ij} z^{i+1} \left(\frac{1}{\bar{T}}\right)^j , \qquad (9)$$

$$\text{with } z = 1 - e^{-z_0 \bar{\rho}} .$$

The coefficients A_{00} - A_{09}, y_0 - y_3, A_{10} - A_{14}, B_{11} - B_{86}, x_0 and z_0 are listed in Table 1.

The analytic Helmholtz free energy for pure isobutane excludes a small region about the critical point inside of which the values predicted for the thermodynamic functions are inaccurate. In dimensionless units, this region is

$$0.7 < \bar{\rho} < 1.3$$

and $$0.985 < \bar{T} < 1.015 \qquad (10)$$

In fact, in order to obtain more accuracy in the supercritical regime, the surface defined by equations (5)-(9) and the constants in Table 1 has not been forced to fit the experimental critical point of isobutane. The critical temperature of the surface overshoots the real critical temperature by approximately 2.2°C. A separate scaled formulation is available for the region defined by (10) [LS1983].

B. Formulation for Pure Isopentane

Let the subscript 4 refer to isobutane, 5 to isopentane, and let properties of isopentane be made dimensionless by the same set of reference constants as those of isobutane (2), (3). Define the following ratios

$$\begin{aligned} f_0 &= \bar{T}_5^c / \bar{T}_4^c , \\ h_0 &= \bar{V}_5^c / \bar{V}_4^c , \\ q_0 &= \bar{P}_5^c / \bar{P}_4^c . \end{aligned} \qquad (11)$$

Then the principle of corresponding states postulates that, for all V and T

$$Z_5(\bar{V}_5, \bar{T}_5) = Z_4\ (\bar{V}_4 = \bar{V}_5/h_0,\ \bar{T}_4 = \bar{T}_5/f_0)$$

$$\text{and} \qquad \bar{A}^{cf}_5(\bar{V}_5, \bar{T}_5) = f_0\ \bar{A}^{cf}_4(\bar{V}_4 = \bar{V}_5/h_0,\ \bar{T}_4 = \bar{T}_5/f_0) - R^{**}\bar{T}_5\ \ell n(h_0) \quad , \tag{12}$$

where Z is the compressibility factor PV/RT (= $\bar{P}\ \bar{V}/R^{**}\bar{T}$), and $\bar{A}^{cf}$ is the configurational portion of the Helmholtz function, $\bar{A}^{cf} = \bar{A} - \bar{A}_0$. These relations imply that $f_0 = h_0\ q_0$.

Since no two substances obey the principle of corresponding states exactly, Rowlinson et al. [Rl969a] and Leland et al. [Ll968] proposed to generalize the principle through the use of two functions, $\theta(V, T)$ and $\phi(V, T)$ to be defined, in the dimensionless system we are using here, through:

$$f = (\bar{T}^c_5/\bar{T}^c_4)\ \theta(\bar{V}_4, \bar{T}_4)$$

$$\text{and} \quad q = (\bar{P}^c_5/\bar{P}^c_4)\ \theta(\bar{V}_4, \bar{T}_4)\ /\ \phi(\bar{V}_4, \bar{T}_4) \quad , \tag{13}$$

so that h will be given by

$$h = f/q = (\bar{T}^c_5\ /\ \bar{T}^c_4)(\bar{P}^c_4\ /\ \bar{P}^c_5)\ \phi(\bar{V}_4, \bar{T}_4) = (\bar{V}^{c\prime}_5/\bar{V}^c_4)\ \phi(\bar{V}_4, \bar{T}_4) \tag{14}$$

These functions θ and ϕ are expected to be slowly varying functions of $\bar{V}_4$ and $\bar{T}_4$, to not be greatly different from unity since $Z^c_5\ /\ Z^c_4$ is close to unity, and to be constructed such that equation (12) will be satisfied for the real fluids. With this new f, q and h substituted for the f_0, q_0

and h_0, one has

$$Z_5\ (\bar{V}_5,\ \bar{T}_5) = Z_4(\bar{V}_4 = \bar{V}_5/h,\ \bar{T}_4 = \bar{T}_5/f) \quad ,$$

$$\bar{A}_5^{cf}\ (\bar{V}_5,\ \bar{T}_5) = f\ \bar{A}_4^{cf}\ (\bar{V}_4 = \bar{V}_5/h,\ \bar{T}_4 = \bar{T}_5/f) - R^{**}\bar{T}_5\ \ell n(h) \quad . \tag{15}$$

With h defined as in (14), the dimensionless critical volume of isopentane $\bar{V}_5^c$ no longer appears in the formulation. In its place we have the quantity $\bar{V}_5^{c'} = (\bar{T}_5^c/\bar{T}_4^c)(\bar{P}_4^c/\bar{P}_5^c)\bar{V}_c^4$ which equals $\bar{V}_5^c$ only if the critical compressibility factors of isobutane and isopentane are identical.

Our choices for the funtions θ and ϕ were made by mapping the vapor pressure and coexisting densities of isopentane onto those of isobutane. For the vapor pressure, we used data obtained in our laboratories (see Section 3 and Table 2). For the coexisting densities, we used the data of Young, Table 3 [Yl895]. We represent θ and ϕ as functions $\bar{\rho}$ and $\bar{T}$ by the expression

$$\theta = a_1 + a_2\ (\bar{\rho}_4 - 1) + a_3\ (\bar{T}_4 - 1) + a_4\ (\bar{T}_4 - 1)^2$$

$$\phi = b_1 + b_2\ (\bar{\rho}_4 - 1) + b_3\ (\bar{T}_4 - 1) + b_4\ (\bar{T}_4 - 1)^2 \tag{16}$$

with the coefficients a_1 - b_4 listed in Table 4 along with the critical parameter values P_5^c, T_5^c of isopentane. We have found no advantage to having the constants a_1 and b_1 depart from unity. The ideal-gas Helmholtz function for isopentane is obtained by interpolation in the table of ideal-gas functions compiled by Scott [S1974].

C. Formulation for the Mixture Properties

The compressibility factor and configurational Helmholtz free energy of the mixture, excluding the ideal-mixing term, are represented as those of a single equivalent substance by means of relations that are generalizations of the expressions (11) - (16):

$$Z_x\ (\bar{V}_x,\ \bar{T}_x) = Z_4\ (\bar{V}_4 = \bar{V}_x/h_x,\ \bar{T}_4 = \bar{T}_x/f_x)$$

$$\bar{A}_x^{cf}\ (\bar{V}_x,\ \bar{T}_x) = f_x\ \bar{A}_4^{cf}\ (\bar{V}_4 = \bar{V}_x/h_x,\ \bar{T}_4 = \bar{T}_x/f_x) - R^{**}\bar{T}_x\ \ell n(h_x) \tag{17}$$

where h_x, f_x are defined by

$$h_x = (\bar{V}_x^{c'}/\bar{V}_4^{c})\ [1 + x\ \{\phi\ (\bar{V}_4,\ \bar{T}_4) - 1\} + a\ x^2(1 - x)\{\phi(\bar{V}_4,\ \bar{T}_4) - 1\}^3]$$

$$f_x = (\bar{T}_x^{c}/\bar{T}_4^{c})\ [1 + x\ \{\theta(\bar{V}_4,\ \bar{T}_4) - 1\}] \tag{18}$$

Here x is the mole fraction of isopentane. For x=0, f_x and h_x reduce to the value of unity; and for x=1 they assume the values for pure isopentane, (13), (14). The constant "a" is adjustable. Its value is listed in Table 5.

The constants $\bar{V}_x^{c'}$ and $\bar{T}_x^{c}$ are pseudocritical constants, related to the locus where $(\partial P/\partial V)_{Tx}$ and $(\partial^2 P/\partial V^2)_{Tx}$ would be zero if the mixture would stay homogeneous. In fact, however, the mixture separates because of material instability prior to reaching the pseudocritical line; the real critical line is obtained by a method to be described shortly.

The constants $\bar{V}_x^{c'}$ and $\bar{T}_x^{c}$ are obtained by Van der Waals-type mixing rules

$$\bar{V}_x^{c\prime} = (1 - x)^2 \bar{V}_4^c + 2x(1 - x) \bar{V}_{45}^c + x^2 \bar{V}_5^{c\prime}$$

$$\bar{T}_x^c = (1 - x)^2 \bar{T}_4^c + 2x(1 - x) \bar{T}_{45}^c + x^2 \bar{T}_5^c \quad , \tag{19}$$

with the constants $\bar{V}_{45}^c$ and $\bar{T}_{45}^c$ defined by the "combining rules"

$$\bar{V}_{45}^c = k \left[0.5 \, (\bar{V}_4^c)^{1/3} + 0.5 \, (\bar{V}_5^{c\prime})^{1/3}\right]^3 \quad ,$$

$$\bar{T}_{45}^c = \ell \left[\bar{T}_4^c \, \bar{T}_5^c\right]^{1/2} \quad . \tag{20}$$

The adjustable parameters k, ℓ are used to adjust the shape of the pseudocritical line, and therefore also of the real critical line of the model.

The additional parameters a, k and ℓ that are required to formulate the properties of the mixture are listed in Table 5.

The ideal-gas part of the mixture Helmholtz free energy is a mole fraction average of the molar free energies of the two components, plus the ideal mixing term $RT\{x \ln x + (1 - x) \ln (1 - x)\}$.

3. EXPERIMENTAL DATA

A. Critical line Data

We determined several points on the critical line of isobutane-isopentane by the method of meniscus disappearance.

For observation of the meniscus disappearance a simple optical cell was constructed (Fig. 1). It consists of a stainless-steel-316 ring, of inner diameter 2.54 cm, thickness 1.27 cm, sandwiched between two circular sapphire windows (of diameter 5 cm, thickness 3 mm) by means of an aluminum clamp. Tin foil of 0.25 mm thickness serves as a gasket. This

way, a disk-shaped cell of nominally 6.5 cm^3 volume is formed. The dimensions of the ring were calibrated at 20°C by the NBS Metrology Division. From the calibration, the volume of the cell at 20°C was calculated to be 6.4484 cm^3, with an uncertainty of 0.1%; the thickness of the tin foil gasket has been taken into account. The cell contains a stirrer, a soft-magnetic-steel rod which is moved around by means of a hand-operated external magnet. The volume of the stirrer is 126 mm^3. One end of a capillary of 1.6 mm outer diameter, 0.45 mm inner diameter and 8 cm length is welded into the ring. The other end is sealed off by means of a miniature pressure valve. The combined volume in line and valve is 22 mm^3, as calculated from the dimensions. The coefficient of linear thermal expansion of the steel ring, which determines the cell volume at temperatures other than 20°C, is assumed to be 16.5×10^{-6} per K in the range of 20-200°C.

The assembled cell and valve have a mass of just over 400 g. The sample mass, typically of the order of 1.5 g, is determined by weighings of the empty and the filled cell on a 1-kg balance with resolution of 0.5 mg.

The cell is connected to a manifold that contains a miniature Sensotech* strain-gage pressure transducer and another valve (Fig. 1). Sample gas vented from the cell is captured above water in an inverted graduated cylinder. The manufacturer claims the pressure transducer to be precise to 0.1% in a temperature range up to 200°C. The arrangement of Fig. 1 permits in-situ calibration of the pressure transducer with respect to a dead-weight gage. We found the transducer performance satisfactory at room temperature; pressure measurements at temperatures above 130°C, however, were hampered by strong drifts of the transducer, often as much

as 10 kPa (0.1 bar) per day; these measurements are therefore not as reliable as we had hoped them to be on the basis of the manufacturer's claim. In the measurements on pure isopentane, however, we mounted the pressure transducer outside the bath, so that these pressures have better reliability than those of the mixtures.

The measurement procedure is to weigh in the required amount of isopentane, and then put in the matching amount of isobutane by means of a volume pump, so as to obtain a mixture nominally of the desired composition at an overall fill density 5-10% above the estimated critical value. The precise amounts of isobutane and isopentane are obtained by weighing. The cell is then attached to the manifold and placed inside a commercial "visibility bath" filled with a low-vapor-pressure silicone oil; the temperature of the bath is controlled to a few hundredths Kelvin. The mixture is heated until the meniscus disappears from the cell at the top. The cell is then heated several degrees while the line and pressure transducer sections are evacuated. The fluid is expanded into the pressure transducer section. Care is taken that the mixture does not phase-separate in the cell. A full expansion corresponds to about 5% decrease in density. It is not necessary to do a complete expansion, although this was done most of the time. With the cell valve open, the fluid is now cooled in steps, and the pressure and temperature measured, until a dark brown color in the cell betrays the closeness of a phase separation near the critical point. The cell valve is then closed and the temperature lowered until the meniscus appears. The meniscus level, at first appearance, and after vigorous stirring, is read with a cathetometer. It will generally be in the upper part of the cell. The cell is then heated until well into the one-phase region, while the fluid

in the transducer is expanded into the inverted graduated cylinder (approximately 20 cm^3 at room temperature). After the vent valve is closed, the sequence of pressure measurements and meniscus level determinations is repeated. The critical point temperature and density are obtained by interpolating in the meniscus level measurements for meniscus disappearance at mid-level in the cell (after allowances for the capillary, valve and stirrer volumes are made). The critical pressure is obtained by extrapolating the isochoric pressures to the transition points, and interpolating between isochores. In several instances we stopped the sequence when the meniscus disappeared at mid-level, and immediately, in situ, calibrated the transducer with respect to a calibrated dead-weight gage. This alleviated somewhat the problems that were caused by the strong drift of the pressure transducer. The barometric pressure is read on an aneroid gage with a resolution of 25 μm of mercury.

After all measurements are completed, the cell is removed, cleaned and weighed, after which the remaining sample is blown off and the empty cell weighed again. The amounts released from the cell during the measurements are calculated from the gasometry data, corrected for gas nonideality. Proof of a successful series of measurements is that the gasometry data add up to the weight loss observed. We have rejected those runs in which the mismatch between the gasometry and weight data exceeded 15 mg. (For those runs we retained, the agreement was usually an order better than that.) Therefore, no uncertainty larger than 1% in the reported density results.

The data obtained with this apparatus are summarized in Table 2 (vapor pressure of isopentane) and Table 6 (critical line data). We

estimate the reliability of the data to be on the level of 20 mK in temperature, 4 kPa in pressure, 1% in density and 0.001 in composition.

The isopentane used in this work was Phillips* research grade of 99.99+ mol percent claimed purity, the isobutane was Phillips* research grade, claimed to be at least 99.9% pure. The isobutane liquid was analyzed by chromatography after the measurements of the isobutane vapor pressure [W1983] and found to contain 30 ppm of nitrogen and 300 ppm of propane. The n-butane content could not be determined.

The isopentane was kept at atmospheric pressure and must therefore have contained some dissolved air. When introducing it as the first component into the visual cell, we always overfilled and blew off some vapor by mild heating of the cell, thus eliminating most of the volatiles.

B. VLE data

The VLE data in the range 15-75°C have been obtained in a visual variable volume cell operated with a mercury displacement pump.

A schematic of the VLE cell and manifold is given in Fig. 2. The pressure cell is a sapphire tube; stainless-steel plugs inserted in the tube at both ends seal it by means of O-rings [D1983]. Samples are introduced from a thermal compressor which is removable and is filled from a gas buret; the amounts of the components of a mixture are determined by weighing. The compositions thus obtained are reliable to ± 0.0002 in mole fraction [M1984]. Mercury fills a calibrated injector pump, the capillaries and part of the sample cell (Fig. 2). It is used to displace the sample from the thermal compressor into the cell, to serve as a pressure-transmitting medium and to fill all noxious volumes, so that the mixture sample is strictly confined to the sapphire tube. The bore of the sapphire tube was calibrated over its length by means of triple-distilled

mercury; that of the injector pump was similarly calibrated by means of decane, the density of which was determined by pycnometry; the pycnometer having been previously calibrated with H_2O. The pump is calibrated to ± 2 mm^3. The pressure is measured by means of a Validyne* pressure transducer, kept at ambient temperature and calibrated with respect to a dead-weight tester. The transducer is filled with mercury in order to eliminate noxious volumes. Pressures are measured to 0.1% or 1 kPa, whichever is the greatest, and head corrections are made. The barometric pressure is read on an aneroid gage with a resolution of 25 μm of mercury. The system is immersed in a stirred water bath, controlled to better than 1 mK. The temperature is read on a quartz thermometer calibrated with respect to a standard platinum resistance thermometer. The temperature resolution is 0.3 mK, the accuracy 1 mK.

VLE measurements are obtained by measuring the meniscus levels of mercury and the vapor-liquid interface of a predetermined amount of mixture prepared gravimetrically, at measured values of pressure and temperature. At fixed P and T, the compositions and densities of coexisting phases are nonvariants. By introducing at least two samples of different but close known compositions, the compositions and densities of the coexisting phases can be calculated from the observed phase volumes and the known total mass [K1980b]. In this case, however, usually the liquid densities were determined by measuring the liquid and vapor volumes, beginning with a tiny vapor volume (<0.05 cm^3 in 6 cm^3) and progressively expanding the volume excessable to the two phase sample. These data were then extrapolated to zero vapor volume. This technique was found to be much more rapid and accurate than the other approaches primarily because of the relatively steep slope of the p-x dew bubble

isotherms. The liquid densities and compositions are listed in Table 7. In this temperature range, the vapor densities are too low to be obtained with any accuracy by this method.

C. PVT data

An existing Burnett PVT apparatus was modified to permit automated data taking along isochores. The details of the original apparatus and the partial automation are or will all be available in the archival literature. [W1965, W1971, W1973, L1987a, L1987b], therefore a brief summary should suffice here.

A schematic of the apparatus is given in Fig. 3. The essential components are the Burnett PVT apparatus and transducer, placed in a temperature-controlled oil bath; an automated pressure injector with associated vent and pressure valves [W1984] on the balancing side of the transducer; manually-operated gas-lubricated piston gages for the ranges 0-4, and 0-18 MPa; an automated quartz spiral Bourdon gage for the range 0-10 MPa; and a mixture supply vessel placed in an oven.

The precision of temperature control and measurement is ± 2 mK. The reproducibility of the pressure transducer is 20 Pa (0.2 mbar). The accuracy of the piston gages is better than 1 part in 10^4. The reproducibility and accuracy of the spiral Bourdon gage, if corrected for zero drift, is better than 300 Pa (3 mbar). Both chambers of the Burnett apparatus (Fig. 3) are filled to the highest pressure that is of interest with the sample to be studied. The fill and expansion valves are closed and the pressure is measured while the transducer diaphragm is maintained in its zero position corresponding to equal pressure on both sides; the zero position is determined by calibration, with the two sides of the transducer interconnected, prior to the actual PVT measurements. The

expansion vessel (the bottom chamber in Fig. 3) is evacuated, the fill valve closed, the expansion valve opened and closed. The new pressure is measured, and the process repeated until the lowest pressure is reached that can be conveniently measured. All pressure measurements are done with great care on quality, well-calibrated dead-weight gages. The volume ratio of the Burnett system, defined as $N = (V_I + V_{II})/V_I$, where V_I is the volume of the top, V_{II} that of the bottom chamber, is determined by sequences of helium expansions, in which the pressure ratios, before and after expansion, are equal to N except for some very small non-ideality corrections. For a highly nonideal fluid such as a slightly supercritical mixture, the pressure ratios depart strongly from N, and the task is to deduce the gas nonideality from the observed pressure ratios. We have done this by first analyzing the low-pressure part of the isotherm, where a quadratic in the density is sufficient to describe the nonideality, and where nonlinear regression techniques developed by Waxman et al. [W1973] can be used. Once the density ρ_m of the highest point in this interval is known, the densities at the subsequent higher pressures are obtained by multiplying ρ_m by the appropriate power of N. Finally, all pressure-density points thus obtained are fitted to a sixth degree polynomial at the reference temperature. Once this part of the work is done, the density of any isochore intersecting the reference temperature can be calculated from the pressure measured at that temperature. For the 90-10 mixture, we measured two Burnett sequences; in one of them, we made isochoric excursions along five isochores, one liquid density, one nearly critical and three at gaslike densities. The 90% isobutane - 10% isopentane mixture was prepared gravimetrically from degassed Matheson* research grade isobutane (85 ppm impurities) and Phillips* research grade

isopentane, reported 99.99+ % pure. Transfering the mixture to the Burnett apparatus was done at supercritical temperatures through heated lines. The transfer was done slowly enough that no significant cooling (with risk of condensation) occurred. Likewise, the Burnett expansions were done very slowly, to avoid excursions into the two-phase region.

During the isochoric measurements, we repeatedly crossed into the two-phase region. We found that although equilibrium times were several hours (compared to one hour in a homogeneous region), we were able to reach equilibrium ultimately. On emerging from the two-phase region, the data in the homogeneous regime were reproduced if a waiting time of about 12 hours was observed. The crossings into the two-phase region have enabled us to establish one bubble and three dew points with considerable precision. This permits a very valuable check on the quality of the thermodynamic surface. Prior to taking the mixture data we measured the vapor pressure of isopentane in the automated isochoric mode. The results are given in Table 2, along with those obtained in the visual cell. The Burnett measurements along the reference isotherm at 425 K are listed in Table 8. The isochoric PVT data of the mixture are listed in Table 9. Table 10 summarizes the bubble and dew points.

4. COMPARISONS OF THE EXPERIMENTAL DATA WITH THE THERMODYNAMIC SURFACE

A. Properties of Isopentane

The vapor pressure of isopentane, as measured in the visual cell and in the PVT apparatus, is compared with the thermodynamic surface in Table 2 and in Fig. 4. The two data sets agree to within 0.2% in pressure, which is within the accuracy of the visual cell data. The data depart from the surface in a systematic way, to a maximum of +0.2% around 350 K and a minimum of -0.3% at the critical point. This appears to be

about the best we could achieve on the basis of generalized corresponding states; we used two critical parameters and six adjustable coefficients in the shape factors to map the isopentane properties onto those of isobutane. Our vapor pressures are systematically higher than those reported by Young [Y1895] by a little over 1% (Table 2 and Fig. 4). Kratzke et al. recently reported similar large positive departures from Young's early pentane vapor pressure measurements in the same temperature range [K1985]. There is insufficient knowledge of the temperature scale used by Young.

The coexisting densities published by Young [Y1895], Table 3, were used to construct the thermodynamic surface of isopentane. At room temperature, Young's liquid density is believed to be accurate to 0.1% [M1984]. At high temperatures, again, there is uncertainty about the temperature scale. As is evident from Table 3, even though our surface departs systematically from Young's liquid densities, the deviations, except at the highest temperature, are all under 0.3%. The vapor densities show larger, but random departures. A property such as a saturated vapor density must have been fiercely difficult to measure in 1895, and we consider the agreement with the surface, within 1.5%, as quite satisfactory.

B. Critical-Line Data of the Mixture

The temperatures, pressures and densities on the critical line are given in Table 6 for the pure components and three mixtures. As we discussed in Section 2A, we made no attempt to fit the critical line; instead, we overestimated T_c by about 2 K in order to achieve an improved fit in the supercritical regime. The critical pressures are, consequently, overestimated by about 0.1 MPa. We fit the critical

densities to about 2%.

Since the surface, being analytic, has an excluded region of about 30% in density, 6 K in temperature, see equation (10), we attach no significance to the deviations listed in Table 6.

C. **VLE Data for the Mixture**

The bubble-point pressures and densities, obtained in the variable-volume apparatus for mixtures of nominally 5%, 10%, 15% and 50% isopentane along five isotherms are compared with the surface in Table 7 and in Figs. 5, 6. The bubble densities are fitted to within 0.5%, all deviations being slightly negative. The bubble pressures show departures up to 2.2%, especially at the lower temperatures, and the departures are also mostly negative. Figs. 5 and 6 make clear, however, that the departures from the surface are not much larger than the scatter of the data. As mentioned in Section 3B, the pressures were measured on a strain gage for the range, 0-2.5 MPa with an absolute accuracy no better than 1 kPa; in the temperature range below 300 K, the pressures of most mixtures are under .3 MPa and the strain gage has reduced relative accuracy. It is of importance to realize that even if the bubble pressures are fitted well, the bubble temperature of an isobaric mixture of fixed composition may be quite far from the one predicted by our surface, especially at the lower temperatures. For instance, at $P = 0.2513$ MPa, $x = 0.0863$, the bubble point would be reached at 288.89 K, (Table 7), while our surface predicts it at 0.5 K higher. The reason is that the bubble pressures, at fixed x, rise only slowly with temperature at the lower temperatures, so that a small error in the predicted isothermal bubble pressure results in a large error in the predicted isobaric bubble temperature.

D. PVT Data of the Mixture

The departures of the experimental PVT data from the thermodynamic surface are reported in Table 8 (425 K reference isotherm), Table 9 (isochoric data in the one and two-phase regions) and Table 10 (dew and bubble points). We report the departures in two different ways -- as percent in pressure, assuming that the temperature, composition and density are exact, and as percent in density, assuming that the temperature, composition and pressure are exact. The accuracy of the surface is most easily assessed by plotting these two deviations, (exp. - calc.)/calc., in percent, with respect to the appropriate variable: pressure on the reference isotherm and temperature on the isochores. Thus, in Figs. 7 and 8, we depict the pressure and density deviations, respectively, along the 425 K isotherm as a function of pressure. We note that the surface represents all pressures to within 0.2%, while the scatter of the pressure data is an order smaller. The departures of the densities from the surface are within 0.2% both at low and high densities, but they peak to almost 1% in the vicinity of the mixture's critical density, which is reached at around 4 MPa: here, because of the large compressibility, small pressure errors translate into large density errors.

Pressure and density departures for the five consecutive isochores are shown in Figs. 9-18. One and two-phase points are marked separately. On the 5.86 mol/dm^3 isochore (Figs. 9, 10) which is at liquid-like densities, pressure and density departures, though systematic, are mostly within 0.2% in the one-phase region; there appears to be a difference in slope. The pressure fit to the 3.29 mol/dm^3 isochore, which is close to the critical isochore, is within 0.2% and the slope is correct. The

density departures, however, are quite large (Figs. 11, 12), a consequence of the large compressibility. On both isochores, we measured many two-phase points and fit their pressures well. The density offsets however, are enormous. This is due to the fact that the 10% mixture still behaves quite much like a pure fluid: the pressure does not vary much along isotherms in the two-phase region, and small pressure errors result in very large density errors. The surface does a fine job on both pressure and density fits to the 1.04 mol/dm^3 isochore (both within 0.1%, see Figs. 15 and 16), though still not within the scatter of the data. The fits on the 1.85 mol/dm^3 isochore (Figs. 13 and 14) and the 0.58 mol/dm^3 isochore (Figs. 17 and 18) show sowewhat larger and systematic departures, especially for the 1.85 mol/dm^3 isochore near the phase boundary. Although the data are not fitted within experimental error, we have not been able to improve the overall fit. Even though the isobutane surface is quite accurate, and six additional adjustable parameters were available for describing isopentane, three more for the mixtures, any improved fit in the supercritical regime occurs at the expense of the fit to the VLE data and vice versa.

E. Bubble and Dew Points from PVT Data

Isochoric PVT data of a mixture of fixed composition experience a change in slope when they enter the two-phase region, except for the isochore that passes through the temperature extremum on the dew-bubble curve in P-T space [D1975]. In our 10% mixture, that particular isochore is still quite close to the critical isochore [D1985], which is the one that does not change slope in a one-component fluid. The mixture critical isochore being at approximately 3.8 mol/dm^3 we are not surprised to find no discernable change of slope on our 3.3 mol/dm^3 isochore. For several

experimental points, it is impossible to decide whether they were in the one-or two-phase region; for several others, experiment and model disagree on their status. On the other four isochores, however, the change in slope is sharp, and we are able to locate the transition quite well by fitting low-order polynomials to the one- and two-phase parts of the isochores and intersecting these polynomials. From visual inspection of the graphs used to determine the intersections (Figs. 19, 20), and from analyzing the computational technique, we estimate that the bubble temperature on the 5.8 mol/dm^3 isochore can be obtained to ± 10 mK, the dew points on the lowest three isochores to ± 30 mK.

The results of the calculation are summarized in Table 9. Assuming the composition and the transition temperature to be exact we can predict both the transition pressure and density from the thermodynamic surface. The measured and predicted values are compared in Table 9 and found to be generally within 0.5% accurate. An exception is the 1.85 mol/dm^3 isochore, where the density is underpredicted by 1.5%. We had already noted (Figs. 13, 14) that the surface does not fit the one-phase densities on this isochore particularly well near the phase boundary.

F. Enthalpy

Koppany and Lenoir [K1979] reported measurements of the enthalpy of mixtures of nominally 0.80 mole fraction of isobutane in isopentane. Enthalpies were measured by injecting the mixture into a calorimeter at fixed pressure and a measured temperature, and then cooling it isobarically to a liquid state at 75°F. The enthalpy difference to this liquid reference state is obtained from the hydrocarbon flow rate and the amount of refrigerant evaporated.

The authors performed test measurements using pure isobutane at 250

psia. We have compared their measured enthalpy difference with those predicted by our Helmholtz function for isobutane. The agreement was strikingly good.

For the mixture, seven isobars were measured, six of which were subcritical. Samples of the mixture were taken periodically throughout the runs and analyzed for composition. The samples contained up to 0.25 mol % n-butane and 0.15 mol % n-pentane, which probably does not affect their behavior very much. The compositions differed by as much as ± 1.5 mol % from the 80-20 nominal values along individual isobars.

In Fig. 21, we have displayed the data and our predictions for four of the isobars. Note that the composition of the experimental data and of our predicted curves varies along isobars. Our predictions, the solid curves, generally agree well with the data in the liquid phase, but are somewhat on the low side in the vapor phase, especially near and above the critical point. The authors' estimate of the location of the phase boundary [K 1979, Fig. 5-1] is quite far from the one predicted by our surface (Fig. 21, full curve, for the 80-20 mixture), especially at the vapor side beyond 360 K, where their estimated phase boundary is about 10 kJ/kg higher than our prediction for the 80-20 mixture. One reason may be that parts of the highest two-phase isobars measured by the authors happened to contain isopentane in excess of 20% by as much as 1-2%. Our measured critical temperature for the 80-20 mixture is about 3 K below the temperature extremum estimated by the authors. It is unlikely that the critical point would be that far below the temperature extremum, since the Moldover-Rainwater model applied to this mixture shows differences less than 1 K between the critical temperature and the temperature extremum for all compositions [D1985]. A 2% offset in composition, however, would go a

long way in explaining the extra width of the dome.

The most worrisome aspect of the data is the strong curvature of the isobars in the two-phase region. Our model cannot be made to exhibit such curvature. We do not think that the excellent results obtained with this calorimeter for pure isobutane guarantee proper functioning if a mixture is used. In particular, the sample is entered into a side arm at the desired pressure, and then heated in a relatively short section of tubing to the initial temperature. It may not be possible for a mixture to reach complete composition equilibrium if the desired initial state is in the two-phase region. This may explain why our agreement with the one-phase data is so much better than with the two-phase data.

5. IMPURITY EFFECTS

The components of the working fluid mixture as it is used in the geothermal power plant are by no means as pure as the samples we have used in our laboratory studies. As a matter of fact, in each of the components there may be as much as 5% contamination principally by isomers. It is of course impossible to correct the thermodynamic tables for every possible type and amount of contamination. Instead, we have tried to make an estimate of the possible errors in the various properties on the basis of a worst-case scenario. Since we have only 10% isopentane in the mixture, even 5% contamination is not going to have a major effect. Therefore, we decided on calculating the effect of 5% n-butane contamination. We have estimated the effect on the pressure and on the phase boundaries of substitution of a fraction of the isobutane by normal butane by developing a corresponding-states model for the three-component mixture isobutane - normal butane - isopentane. The critical pressure, temperature and ideal-gas properties of n-butane were taken from the correlation by Haynes

and Goodwin [H1982]. A straightforward generalization of equations 17-20 was made by postulating:

$$Z_x\ (\bar{V}_x,\ \bar{T}_x) = Z_{i4}\ (\bar{V}_{i4} = \bar{V}_x/h_x,\ \bar{T}_{i4} = \bar{T}_x/f_x) \quad , \tag{17'}$$

$$\bar{A}_x^{cf}\ (V_x,\ T_x) = f_x\ A_{i4}^{cf}\ (\bar{V}_{i4} = \bar{V}_x/h_x,\ \bar{T}_{i4} = \bar{T}_x/f_x) - R^{**}\ \bar{T}_x\ \ell n\ (h_x) \quad ,$$

where h_x, f_x are defined by

$$h_x = \frac{\bar{V}_x^{c'}}{\bar{V}_{i4}^{c}} \left[1 + x_5\ \{\phi\ (\bar{V}_{i4},\ \bar{T}_{i4}) - 1\} + a\ x_5^2\ (1 - x_5)\ \{\phi\ (\bar{V}_{i4},\ \bar{T}_{i4}) - 1\}^3\right], \tag{18'}$$

$$f_x = \frac{\bar{T}_x^{c}}{\bar{T}_{i4}^{c}} \left[1 + x_5\ \{\theta\ (\bar{V}_{i4},\ \bar{T}_{i4}) - 1\}\right] \quad .$$

The pseudocritical constants of the three-component mixture, $\bar{V}_x^{'c'}$ and $\bar{T}_x^{c}$, are calculated from

$$V_x^{c'} = x_{i4}^2\ \bar{V}_{i4}^{c} + x_5^2\ \bar{V}_5^{c'} + x_{n4}^2\ \bar{V}_{n4}^{c'} + 2\ x_{i4}\ x_5\ \bar{V}_{i45} + 2\ x_{i4}\ x_{n4}\ \bar{V}_{i4\ n4} + 2\ x_{n4}\ x_5\ \bar{V}_{n45} \quad ,$$

$$T_x^{c} = x_{i4}^2\ \bar{T}_{i4}^{c} + x_5^2\ \bar{T}_5^{c} + x_{n4}^2\ \bar{T}_{n4}^{c} + 2\ x_{i4}\ x_5\ \bar{T}_{i45} + 2\ x_{i4}\ x_{n4}\ \bar{T}_{i4\ n4} + 2\ x_{n4}\ x_5\ \bar{T}_{n45} \quad ,$$

with

$$\bar{V}_{n4}^{c'} = \bar{V}_{i4}^{c}\ \frac{\bar{T}_{i4}^{c}}{\bar{T}_{n4}^{c}}\ \frac{\bar{P}_{n4}^{c}}{P_{i4}^{c}} \quad . \tag{19'}$$

In (17')-(21'), the subscript i4 denotes isobutane, n4 normal butane, 5 isopentane. As combining rules for T_{i45} and V_{i45} we used equation (20), and for the other coefficients in (19') we used

$$T_{i4\ n4} = \left[\bar{T}^c_{i4}\ \bar{T}^c_{n4}\right]^{1/2} ,$$

$$T_{n45} = \left[\bar{T}^c_{n4}\ \bar{T}^c_{5}\right]^{1/2} ,$$

$$V_{i4\ n4} = \left[0.5\ (\bar{V}^c_{i4})^{1/3} + 0.5\ (\bar{V}^c_{n4})^{1/3}\right]^3 ,$$

$$V_{n45} = \left[0.5\ \left[\bar{V}^c_{n4}\right]^{1/3} + 0.5\ \left[\bar{V}^{c\prime}_{5}\right]^{1/3}\right]^3 . \qquad (20')$$

The ideal-gas part of the Helmholtz free energy was the mole fraction average of the ideal-gas contributions of the individual components, plus the ideal-mixing term. For phase equilibrium calculations, the chemical potentials were obtained by [R1969]:

$$\mu_{i4} = \bar{A} - \bar{V}\ (\partial\bar{A}/\partial\bar{V})_{T,\ \text{all } x} - x_5\ (\partial\bar{A}/\partial x_5)_{T,V,x_{n4}} - x_{n4}\ (\partial\bar{A}/\partial x_{n4})_{T,V,x_5}$$

$$\mu_{n4} = \bar{A} - \bar{V}\ (\partial\bar{A}/\partial\bar{V})_{T,\ \text{all } x} - x_5\ (\partial\bar{A}/\partial x_5)_{T,V,x_{n4}} + (1 - x_{n4})(\partial\bar{A}/\partial x_{i4})_{T,V,x_5} \qquad (21')$$

$$\mu_5 = \bar{A} - \bar{V}\ (\partial\bar{A}/\partial\bar{V})_{T,\ \text{all } x} + (1 - x_5)(\partial\bar{A}/\partial x_5)_{T,V,x_{n4}} - x_{n4}\ (\partial\bar{A}/\partial x_{n4})_{T,V,x_5}$$

In order to solve for the conditions of coexisting phases, we have six variables, T, P and two x values in each of the two phases. Three conditions link the chemical potential for each of the components in the two phases. Consequently, on choosing T, x_{i4} and x_{n4}, the pressure, and also the pressure increase over that of the 90-10 pure isobutane-isopentane mixture, can be calculated. In this way the shifted dew-bubble curve isotherms in P-x space for 2% and 4% normal butane, respectively, were calculated (Fig. 22). In Fig. 23, we show similar effects on the dew and bubble densities in ρ-x space. For 4% n-butane, the coexistence curve shifts by the equivalent of ~1 K. Finally, Fig. 24 portrays the effect of 2% normal butane on isotherms in P-ρ space. Note that near the mixture's critical point the effect of the impurity on the density, if the pressure is held fixed, is very large. We have also drawn in several isentropes. Although the choice of zero point is arbitrary, the change in spacing between the isentropes for isopentane and pure isobutane compared to those for isobutane with 2% normal butane as one crosses from subcritical to supercritical densities is very evident, indicating that the effect of the impurity is felt most near the critical isentrope.

6. TABLES OF THERMODYNAMIC PROPERTIES

We have prepared tables of the thermodynamic properties of the 90 mol % isobutane- 10 mol % isopentane mixture along isobars as a function of temperature The properties tabulated are specific volume, enthalpy, entropy, the derivatives $(\partial P/\partial \rho)_{Tx}$ and $(\partial P/\partial T)_{Vx}$, and the specific heat C_p. The point where the isobaric crossing of the phase boundary occurs is indicated, together with the properties of the

coexisting phase at the same pressure and temperature. In two separate tables, we list the properties at the dew point and at the bubble point, respectively, for a 90-10 mixture at 5 K temperature increments. Appendix A contains the tabulation in SI units. Appendix B contains the tabulation in British units. Appendix C contains the Fortran Computer program that has been used to generate the tables. The comment sections in the main program explain the options given to the user for input variables, units and output.

7. CONCLUSIONS

We present tabulations of thermodynamic properties of a 90% isobutane- 10% isopentane mixture. The tables are based on

1. A preexisting Helmholtz function for isobutane that, in general, predicted densities to 0.1% if pressure and temperature are given.
2. New vapor pressures and old coexistence curve data for isopentane.
3. VLE data for the mixtures of 5-50 mol% isopentane in the range of 288-328 K.
4. A few new critical-line data for mixtures at nominal 20, 35 and 50 mol% isopentane.
5. PVT data for the 90 mol% isobutane- 10 mol% isopentane mixture from 360-430 K.
6. The principle of generalized corresponding states, with isobutane as the reference fluid.

The predictions of the surface for the pressures and densities in the one-phase region and on the dew-bubble curve are generally better than 0.5% and, except in the extended critical region, mostly within 0.2%. They are, however, in general not quite within the accuracy of the data even though a fair number of additional adjustable parameters (6 for

isopentane, 3 more for the mixture) have been introduced. The difficulty is, in part, due to the fact that we are fitting an analytic surface to data which, for a good part, are near a critical point. We do not think, however, that this is the full story. It is well known that for accurate representation of pure-fluid PVT and coexistence curve data, multiparameter equations are required, see, for instance [H1984]. It is unlikely that, on substituting part of one species of molecule by another, only a handful of additional parameters will result in accurate fits to data for the mixture at all compositions.

For the practical application in question, our surface will be amply accurate enough, in view of the fact that the composition of the actual working fluid mixture is the principal source of error.

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Dr. Richard Davis, Center for Absolute Physical Quantities, gave help and advice with the preparation of the mixture, and allowed us access to his weighing facilities. We learned about the dew-bubble curves of the mixture from discussions with J.C. Rainwater. M. Emeruwa took part of the VLE data.

*In order to describe materials and experimental procedures adequately, it was occasionally necessary to identify commercial products by manufacturer's name or label. In no instance does such identification

imply endorsement by the National Bureau of Standards, nor does it imply that the particular product or equipment is necessarily the best available for the purpose.

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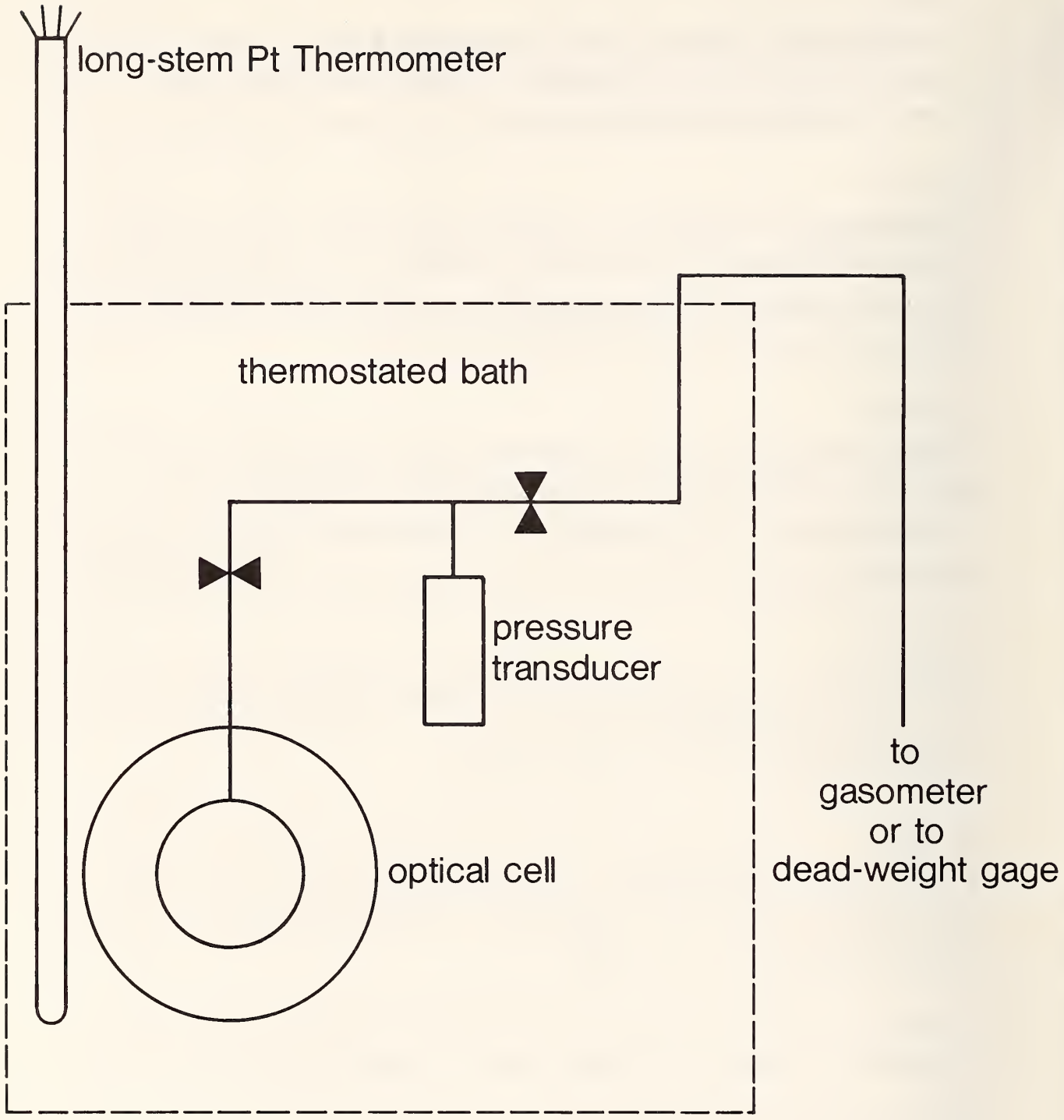

Fig. 1. Visual cell and manifold for critical-point determination.

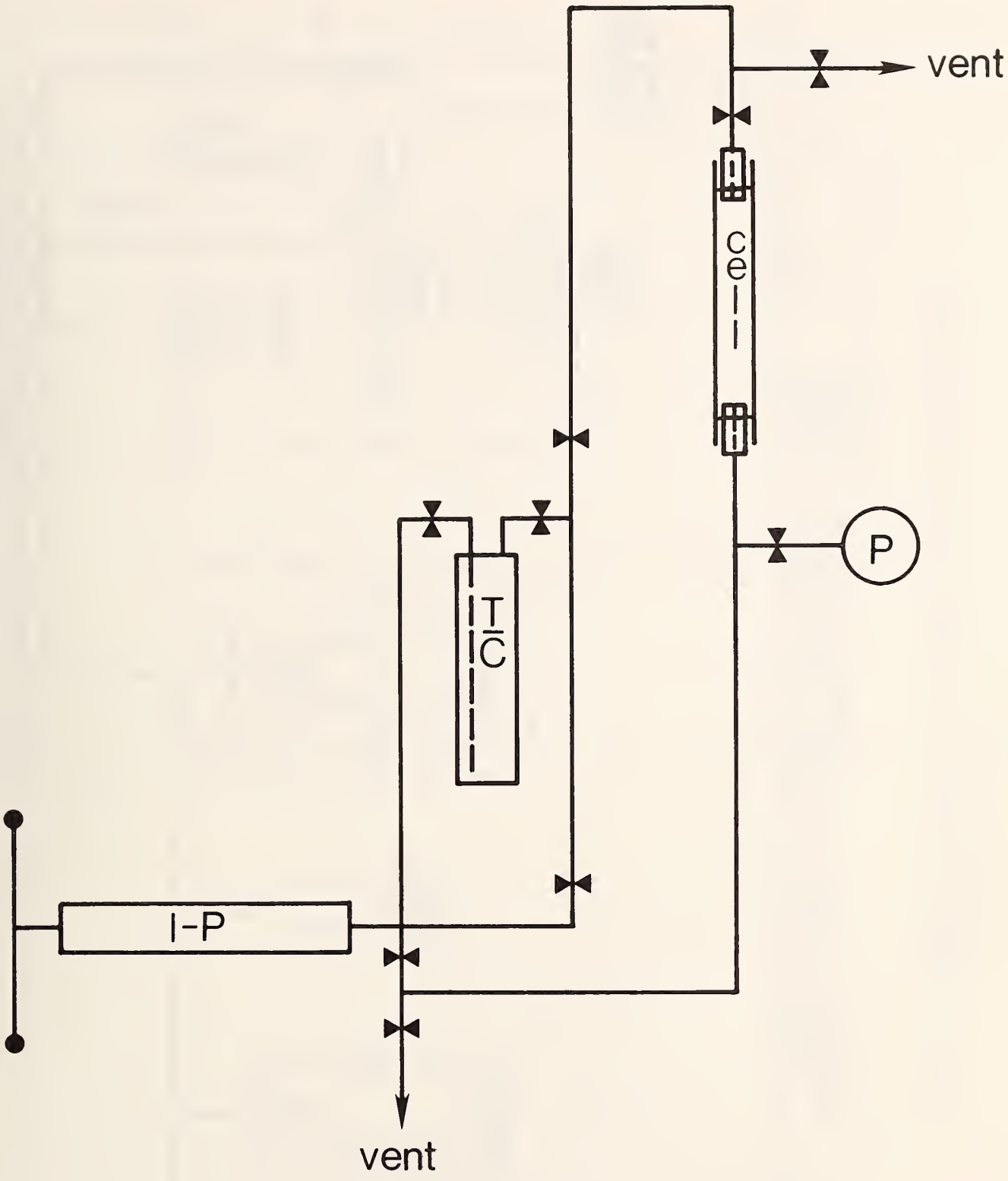

Fig. 2. VLE cell and manifold, including volume pump (I-P) and thermal compressor (T/C).

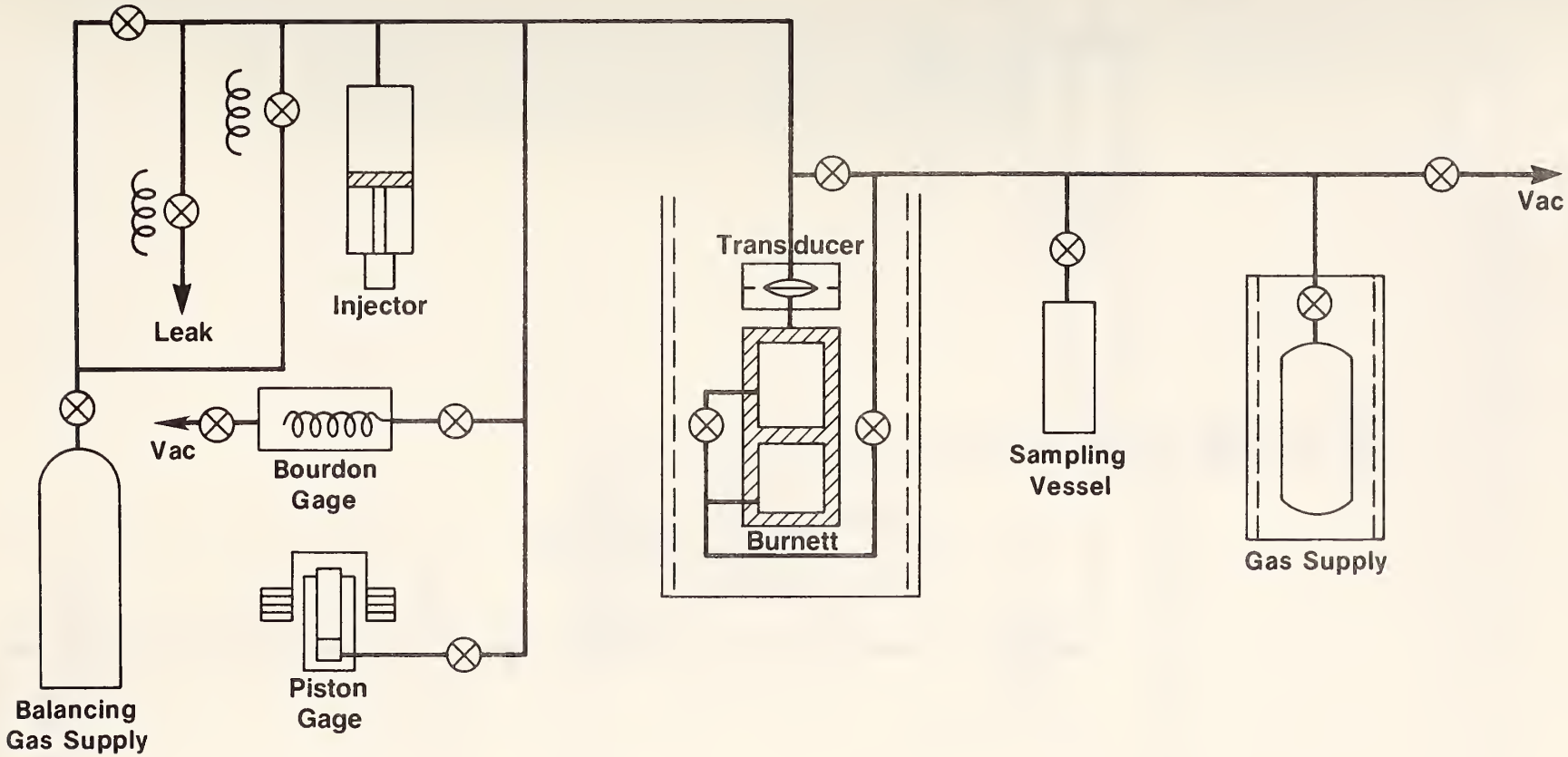

Fig. 3. Burnett PVT apparatus with manifold, automated pressure injector, manually operated and automated pressure gages, sample cell and oven for introducing mixtures in supercritical conditions.

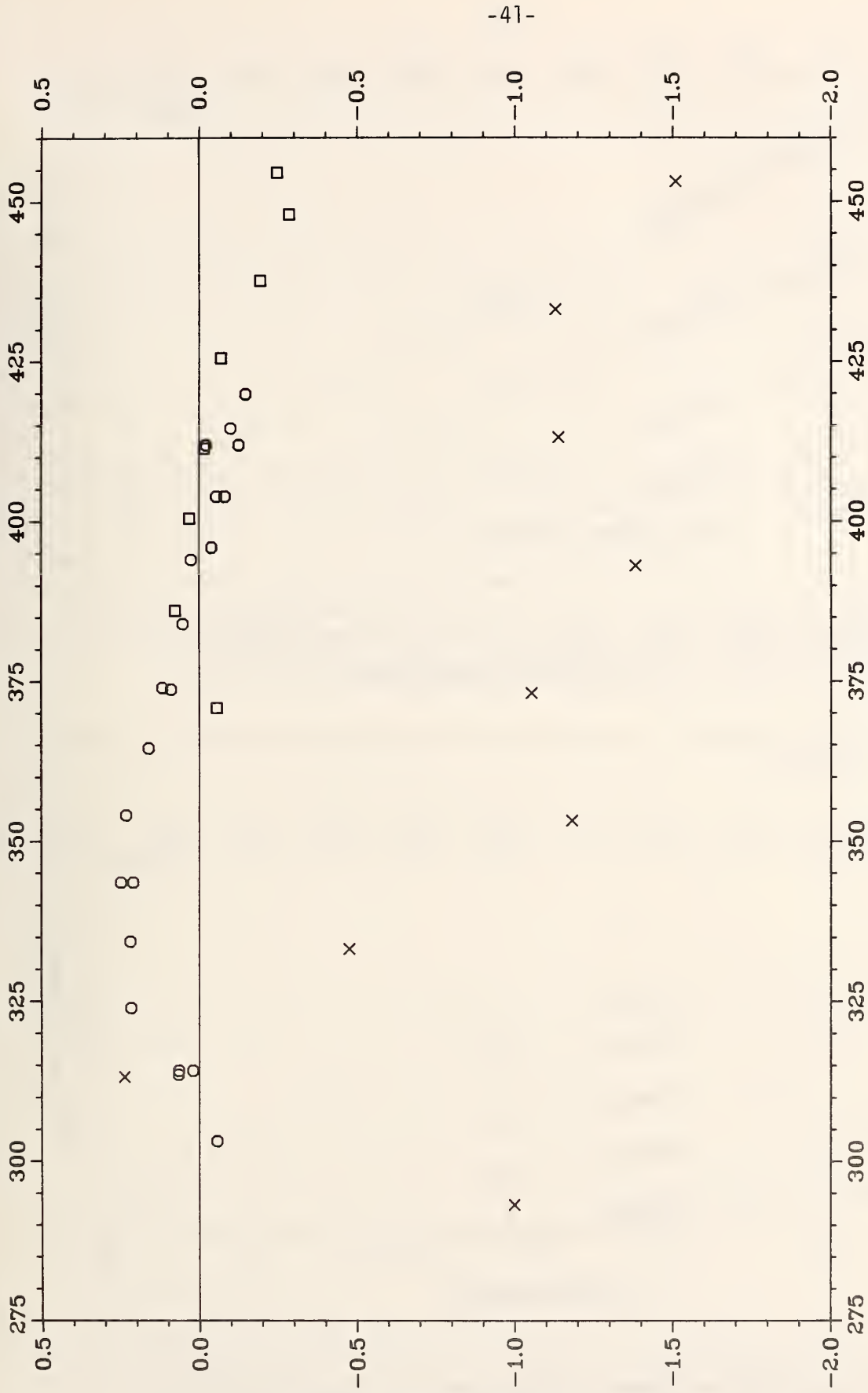

Fig. 4. Departures of the vapor pressure of isopentane from the thermodynamic surface.

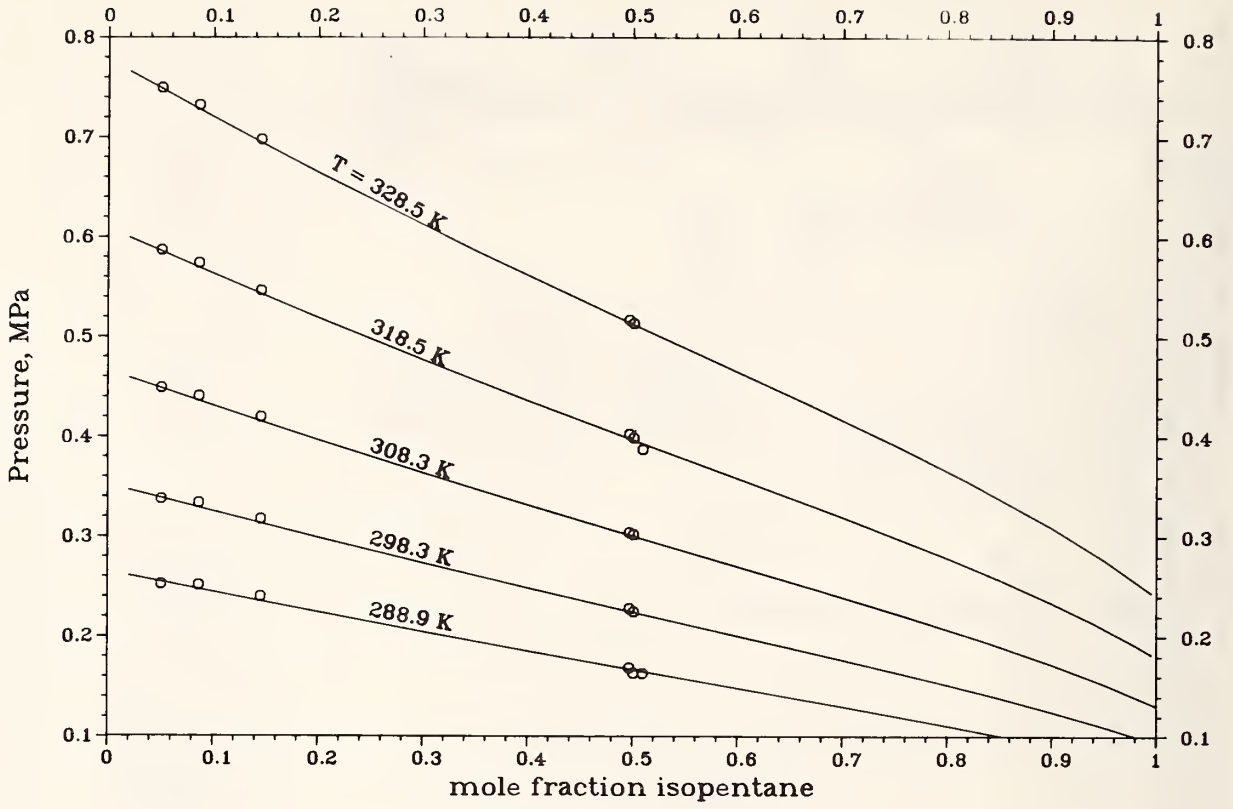

Fig. 5. Bubble pressures of mixtures of isobutane and isopentane on five isotherms.

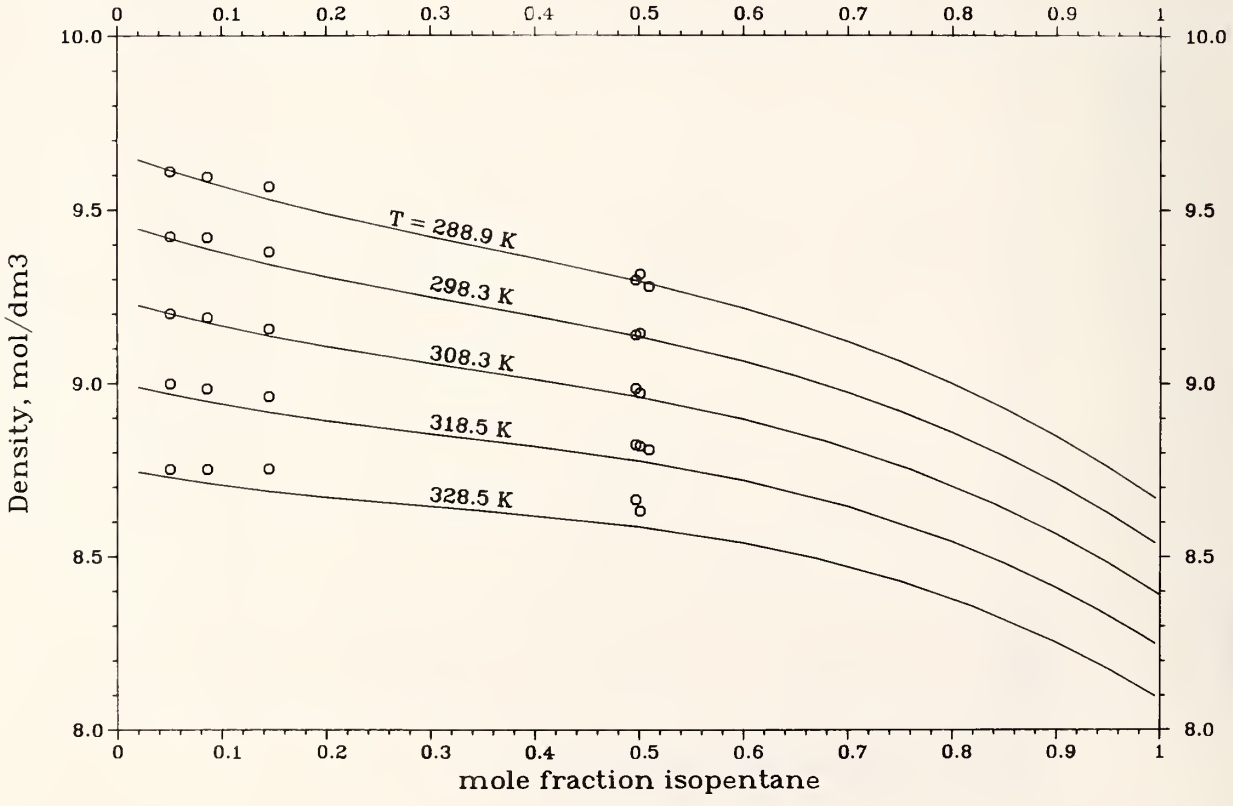

Fig. 6. Liquid densities at the bubble points of mixtures of isobutane and isopentane on five isotherms.

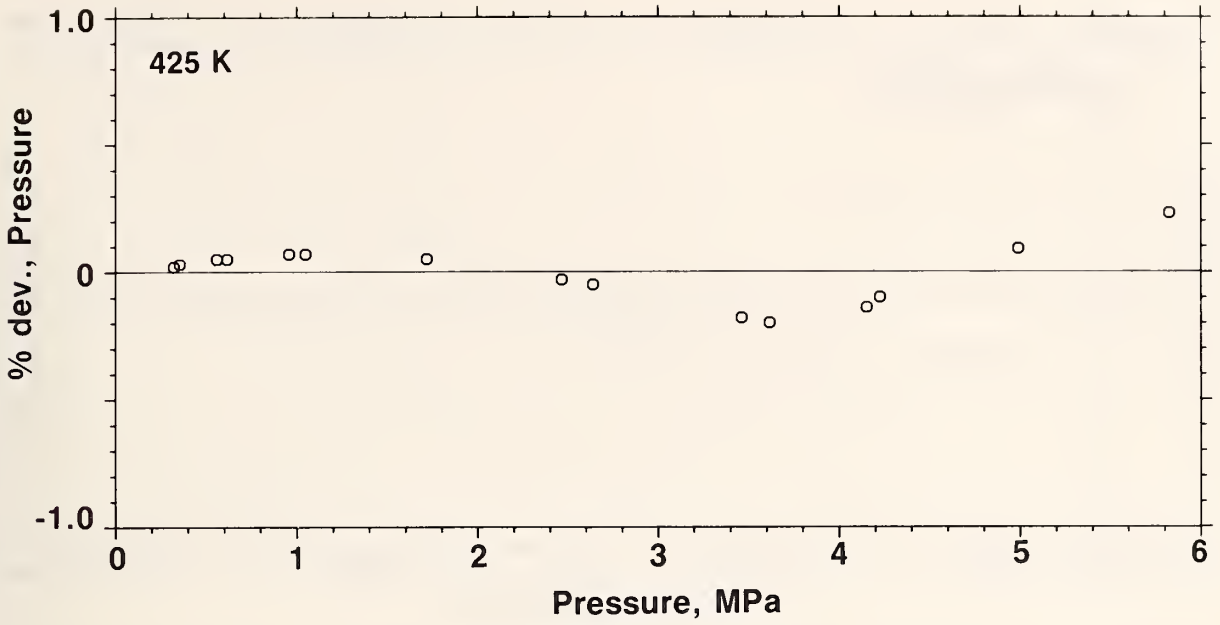

Fig. 7. Percentage departures $\delta P = (P_{exp} - P_{calc})/P_{calc}$ of the 425 K isotherm from the thermodynamic surface, under the assumption that temperature, composition and density are exact.

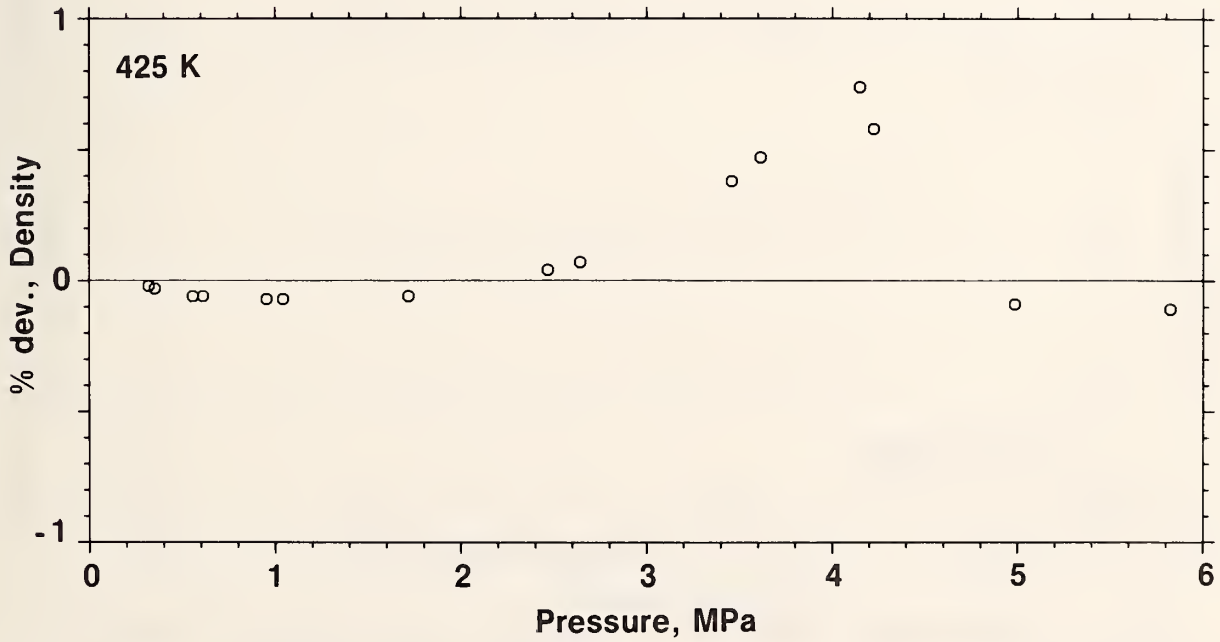

Fig. 8. Percentage departures $\delta\rho = (\rho_{exp} - \rho_{ccalc})/\rho_{calc}$ of the 425 K isotherm from the thermodynamic surface, under the assumption that temperature, composition and pressure are exact.

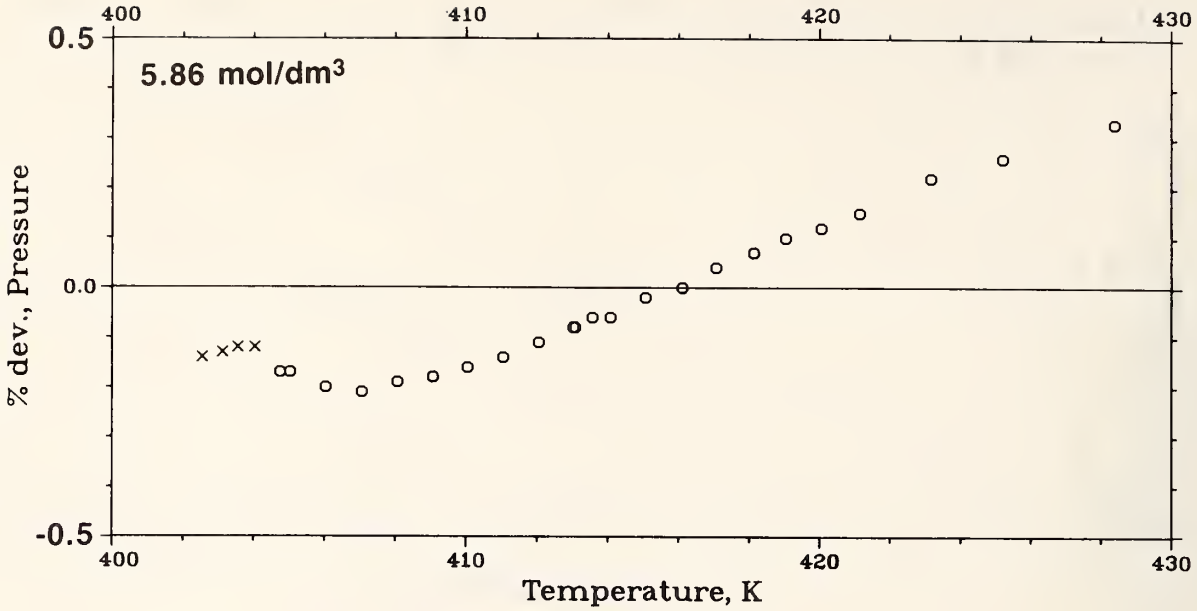

Fig. 9. Percentage departures $\delta P = (P_{exp} - P_{calc})/P_{calc}$ of the 5.86 mol/dm^3 isochore from the thermodynamic surface, under the assumption that temperature, composition and density are exact. o - one-phase, x - two-phase data.

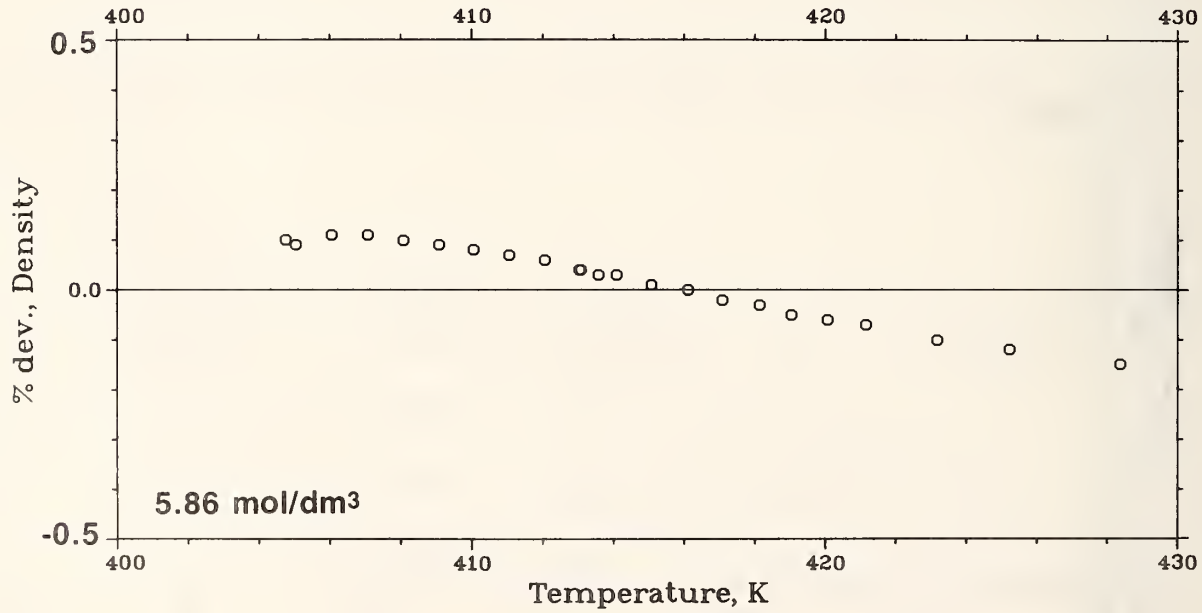

Fig. 10. Percentage departures $\delta\rho = (\rho_{exp} - \rho_{calc})/\rho_{calc}$ of the 5.86 mol/dm^3 isochore from the thermodynamic surface, under the assumption that temperature, composition and pressure are exact.

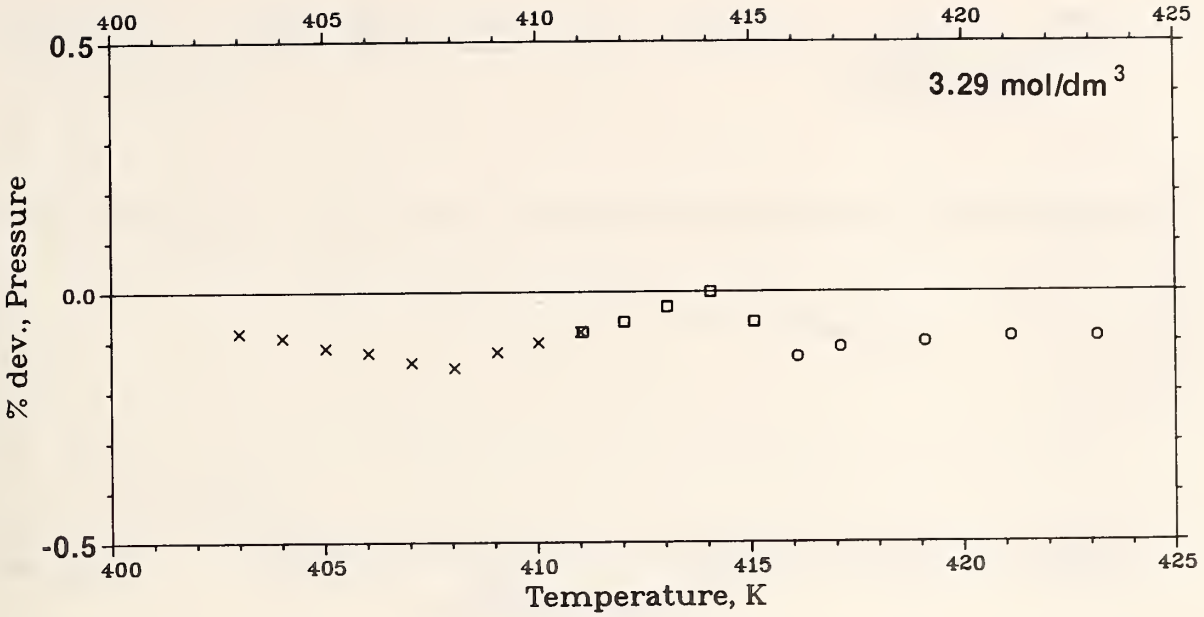

Fig. 11. Percentage departures $\delta P = (P_{exp} - P_{calc})/P_{calc}$ of the 3.29 mol/dm^3 isochore from the thermodynamic surface, under the assumption that temperature, composition and pressure are exact. o - one-phase, x - two-phase data □ status dubious.

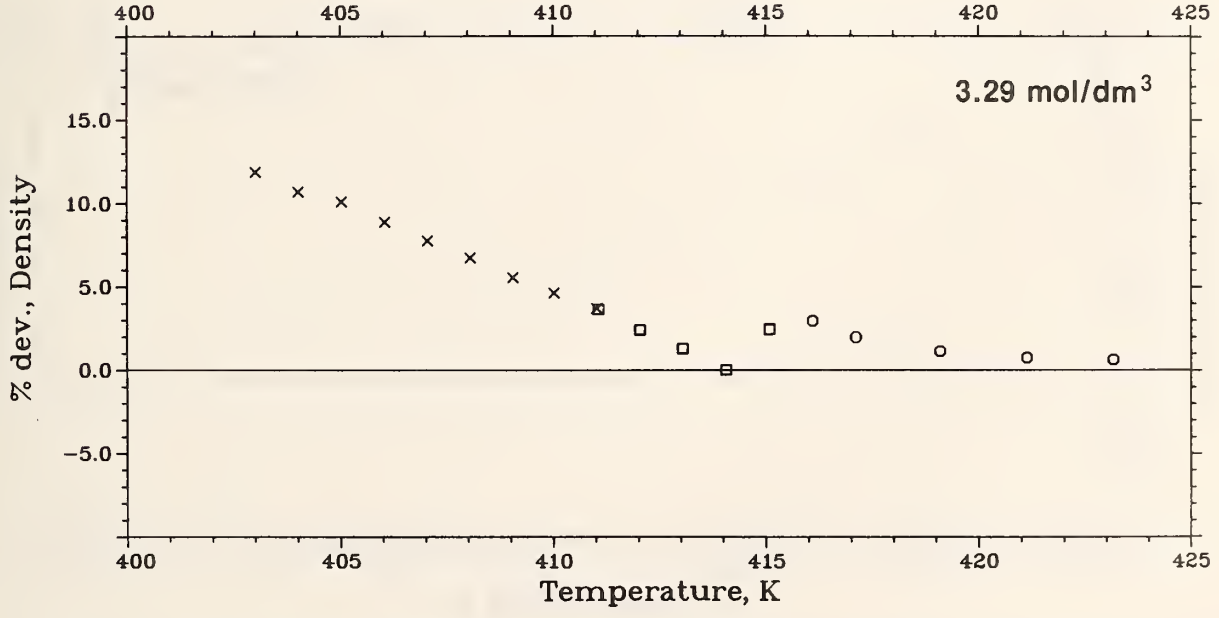

Fig. 12. Percentage departures $\delta\rho = (\rho_{exp} - \rho_{calc})/\rho_{calc}$ of the 3.29 mol/dm^3 isochore from the thermodynamic surface, under the assumption that temperature, composition and pressure are exact. Symbols as in Fig. 11.

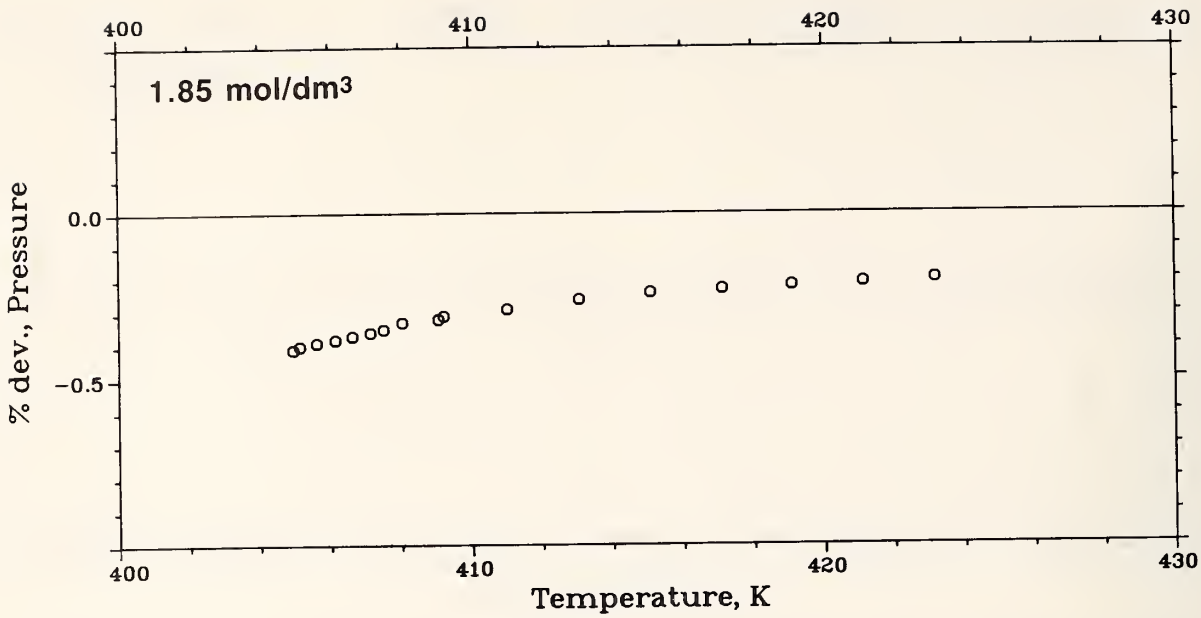

Fig. 13. Percentage departures $\delta P = (P_{exp} - P_{calc})/P_{calc}$ of the 1.85 mol/dm^3 isochore from the thermodynamic surface, under the assumption that temperature, composition and pressure are exact.

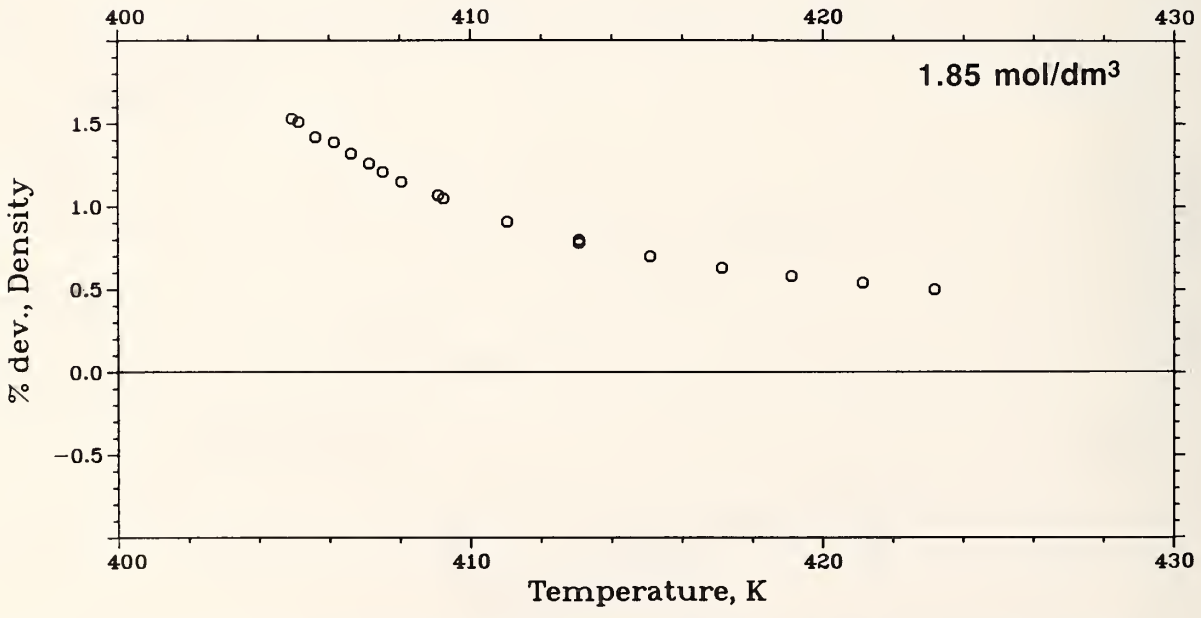

Fig. 14. Percentage departures $\delta\rho = (\rho_{exp} - \rho_{calc})/\rho_{calc}$ of the 1.85 mol/dm^3 isochore from the thermodynamic surface, under the assumption that temperature, composition and pressure are exact.

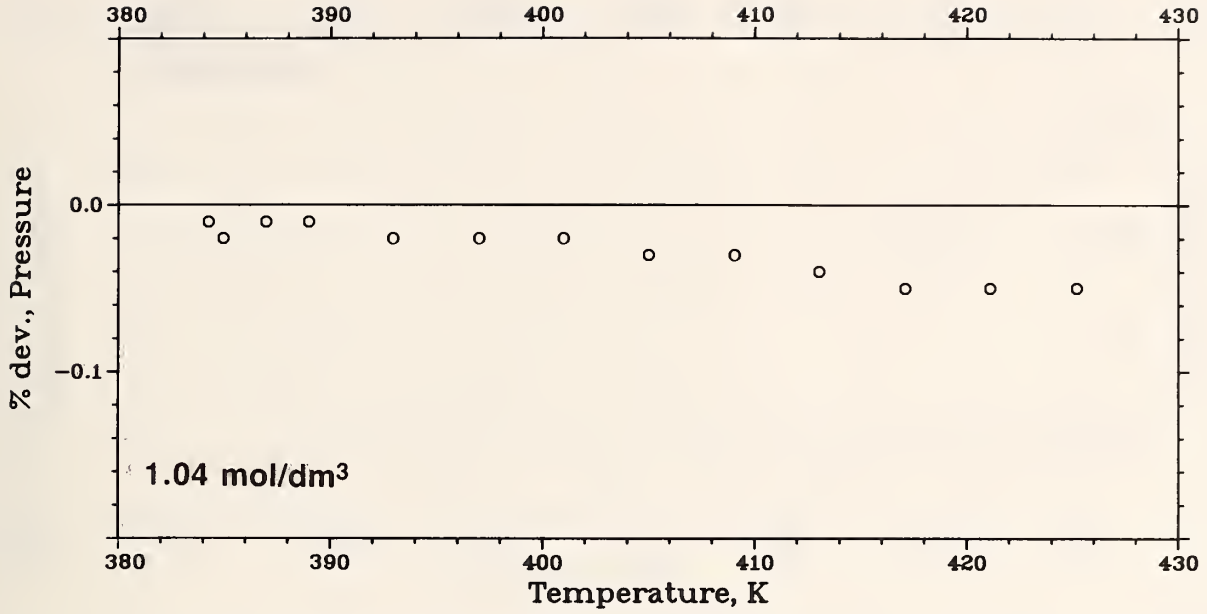

Fig. 15. Percentage departures $\delta P = (P_{exp} - P_{calc})/P_{calc}$ of the 1.04 mol/dm^3 isochore from the thermodynamic surface, under the assumption that temperature, composition and pressure are exact.

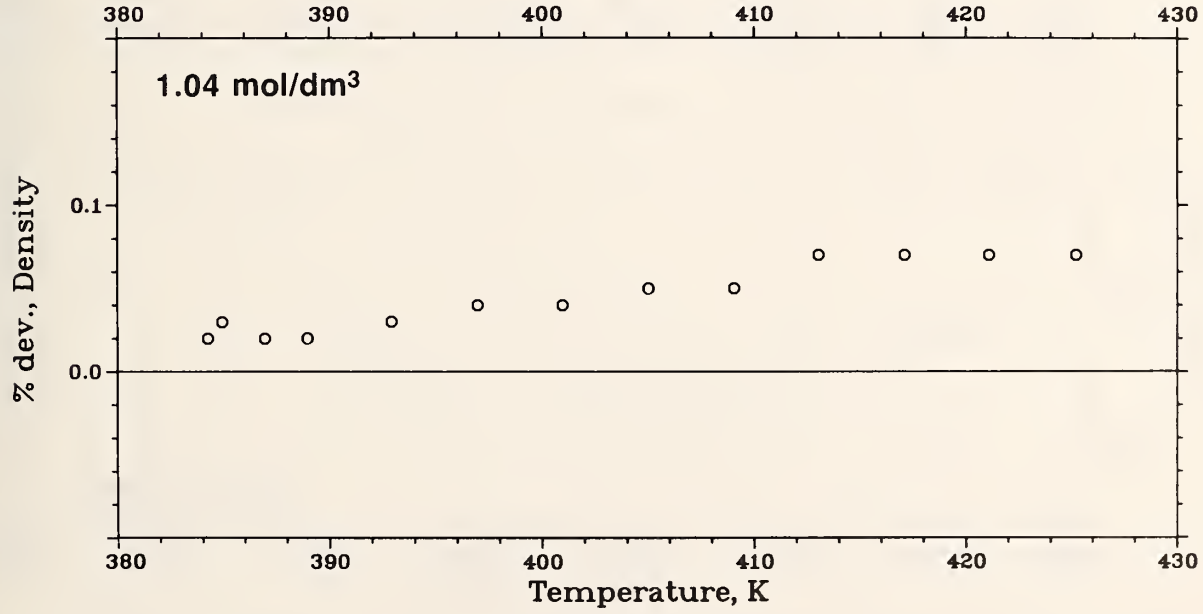

Fig. 16. Percentage departures $\delta\rho = (\rho_{exp} - \rho_{calc})/\rho_{calc}$ of the 1.04 mol/dm^3 isochore from the thermodynamic surface, under the assumption that temperature, composition and pressure are exact.

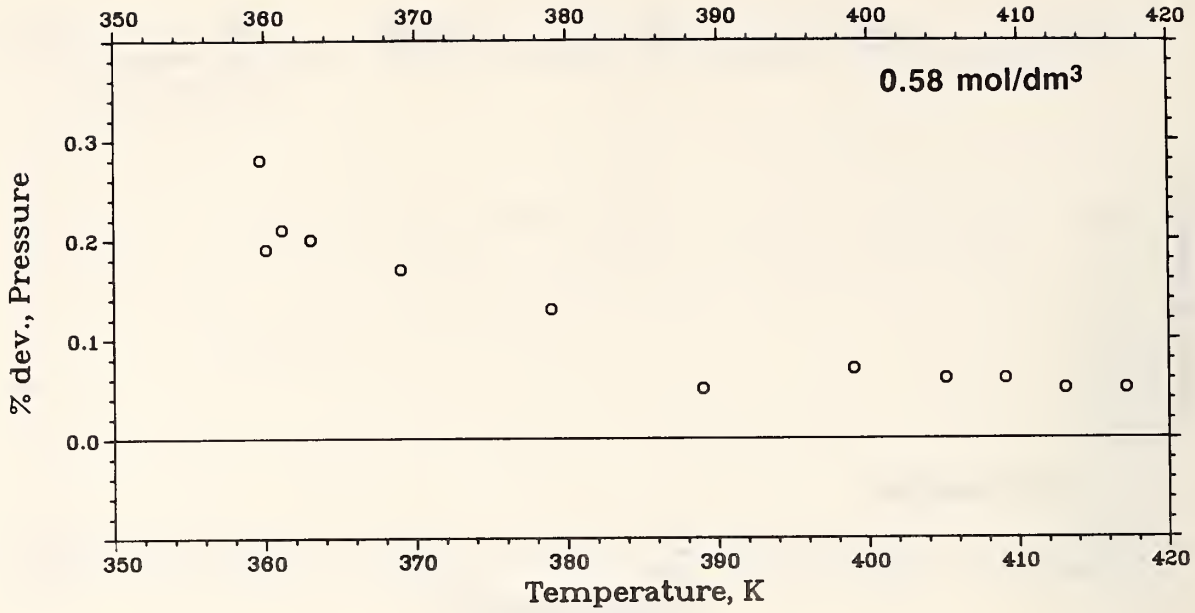

Fig. 17. Percentage departures $\delta P = (P_{exp} - P_{calc})/P_{calc}$ of the 0.58 mol/dm^3 isochore from the thermodynamic surface, under the assumption that temperature, composition and pressure are exact.

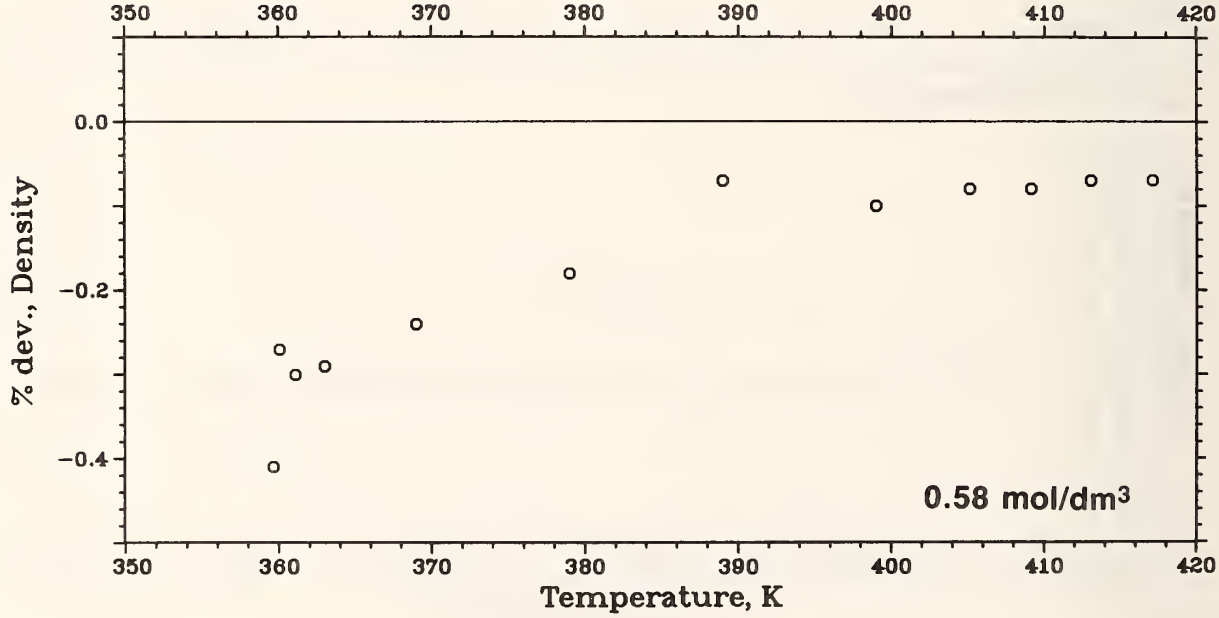

Fig. 18. Percentage departures $\delta\rho = (\rho_{exp} - \rho_{calc})/\rho_{calc}$ of the 0.58 mol/dm^3 isochore from the thermodynamic surface, under the assumption that temperature, composition and pressure are exact.

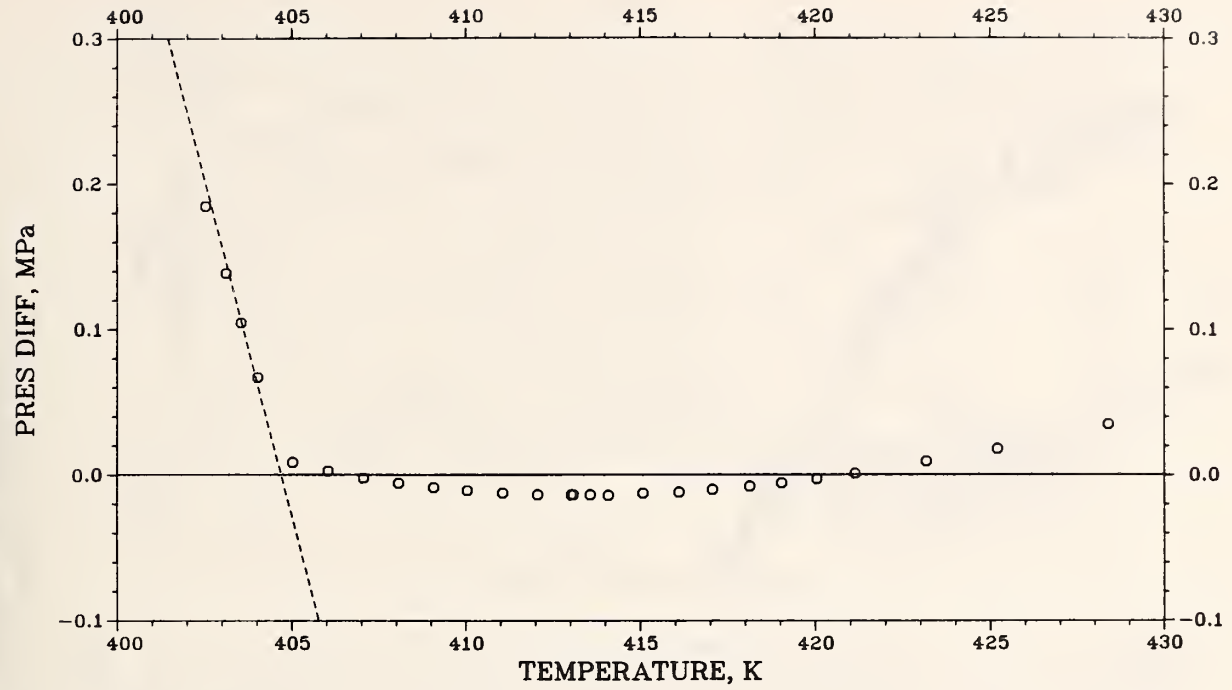

Fig. 19. Example of an isochoric intercept on the bubble side: the one- and two-phase parts of the 5.86 mol/dm^3 isochore fitted separately to low-degree P(T) polynomials, and intersected.

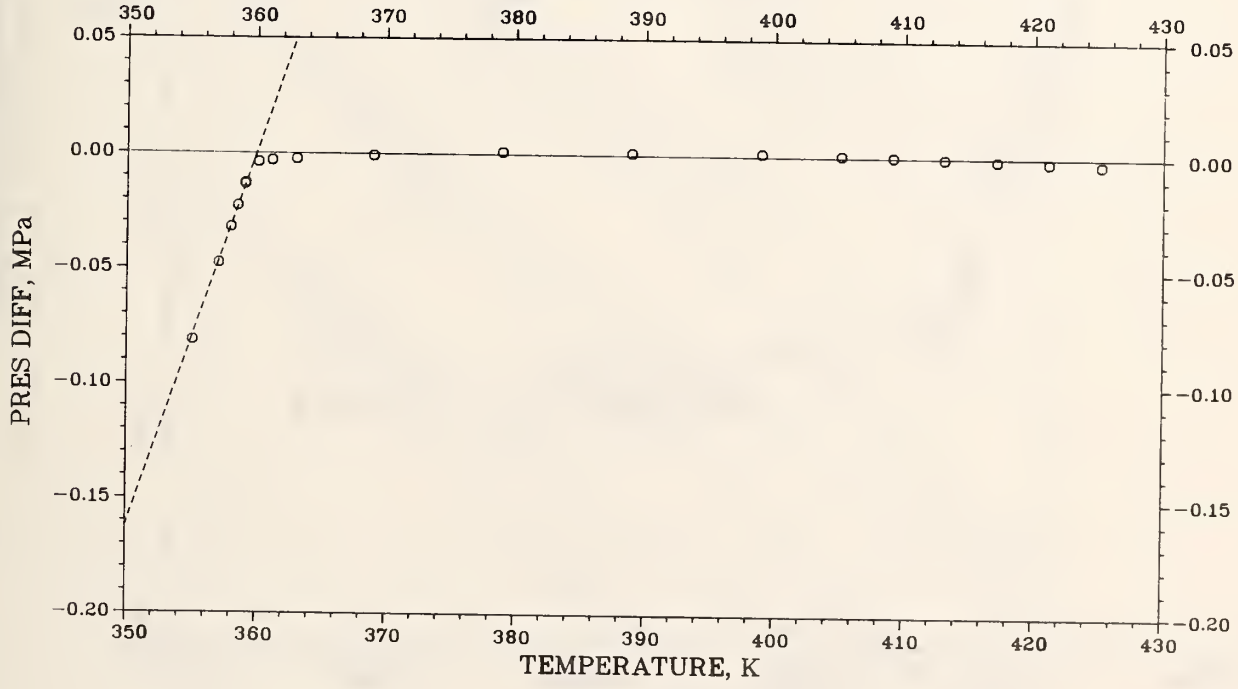

Fig. 20. Example of an isochoric intercept on the dew side: the one- and two-phase parts of the 0.58 mol/dm^3 isochore fitted separately to low-degree P(T) polynomials, and intersected.

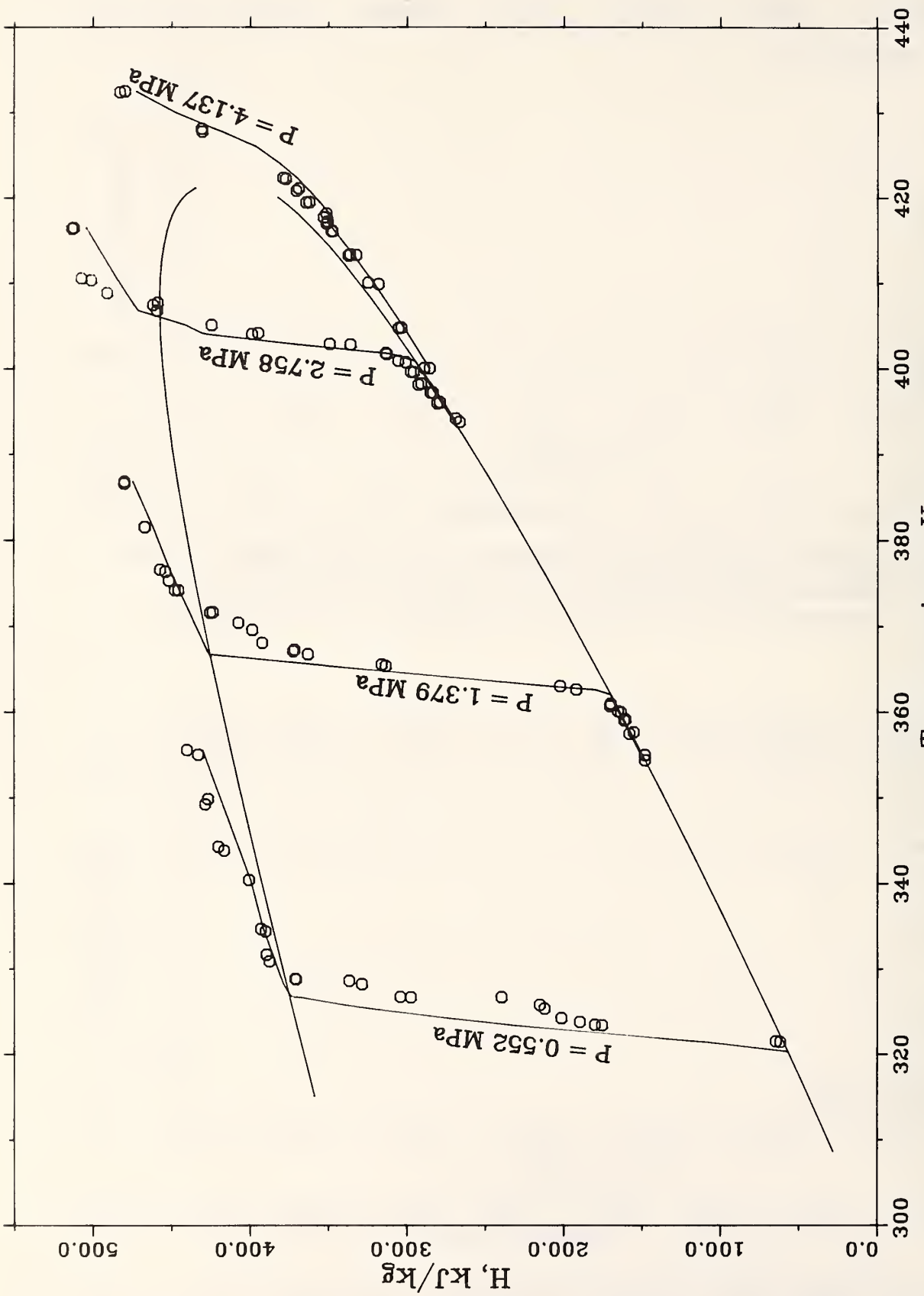

Fig. 21. The fit of our surface to the enthalpy-of-mixing data for the nominal 80-20 mixture [K 1979]. Our surface is somewhat below the data on the vapor side (top) and cannot reproduce the curvature near the phase boundaries.

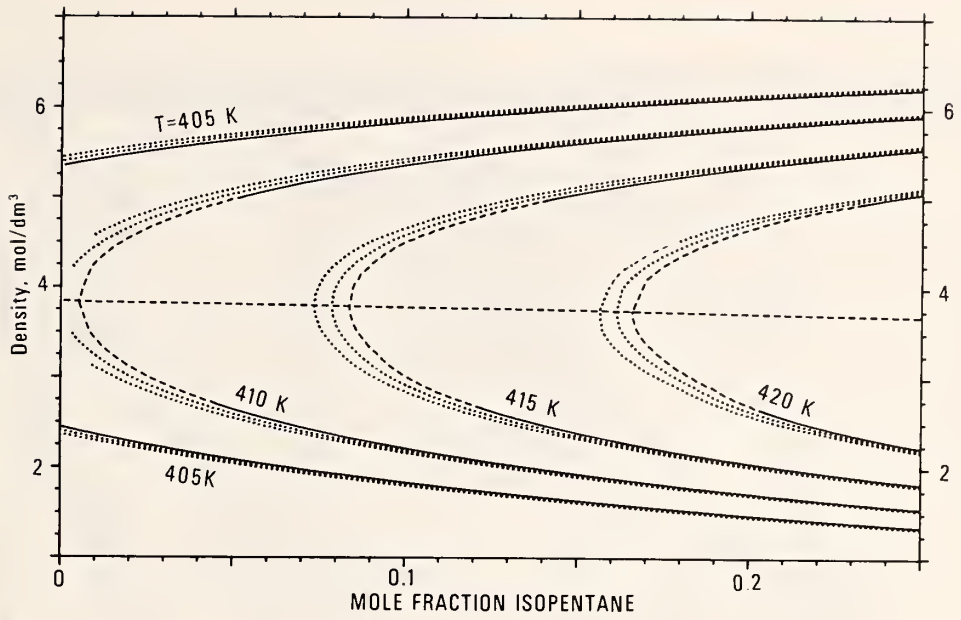

Fig. 22. The effect of substituting, respectively, 2 and 4 mol% of normal butane for isobutane. The dew-bubble curves in ρ-x space become wider and the shift in the location of the top of the dome for 4% normal butane is the equivalent of a drop in temperature of 1 K if no contamination were present.

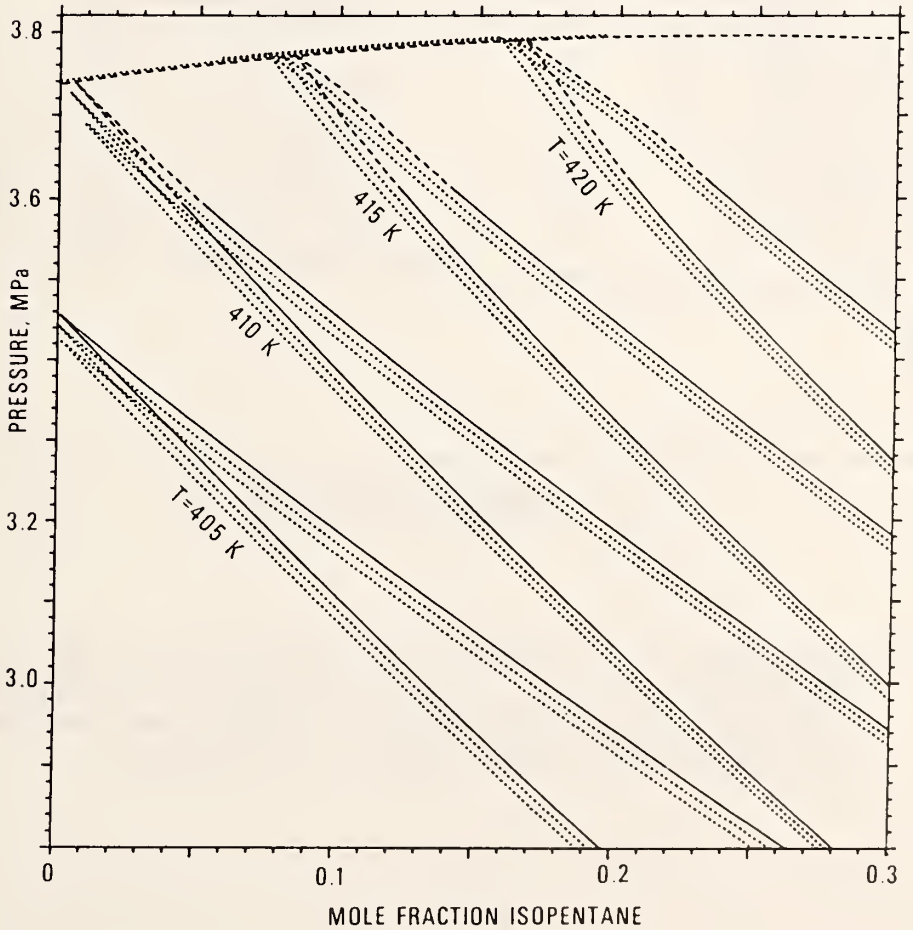

Fig. 23. The effect of 2% and 4% normal-butane substitution on the dew and bubble pressures in P-x space.

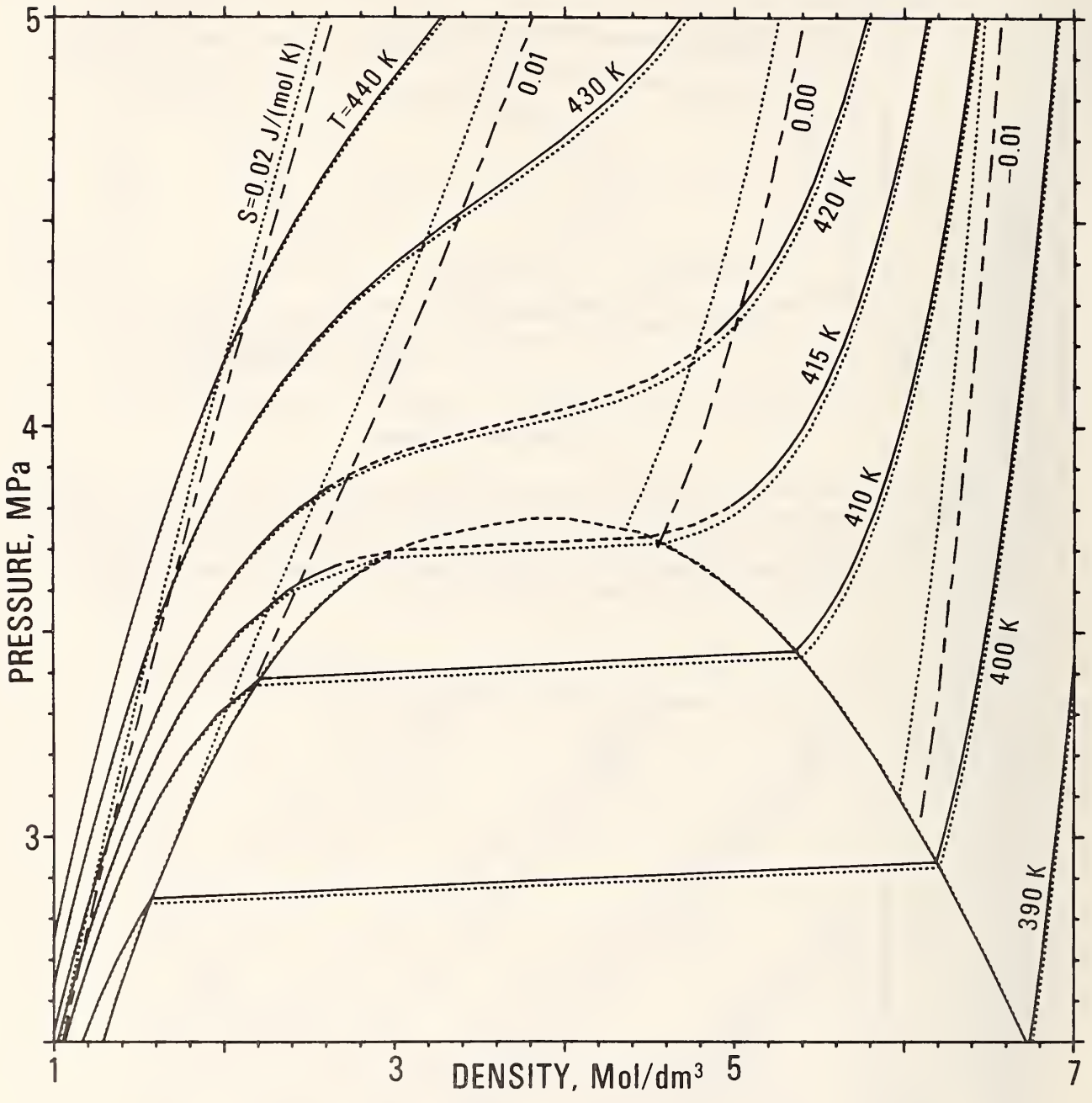

Fig. 24. The effect of 2% normal-butane substitution on the P-ρ isotherms and isentropes. The absolute assignment of the isentropes is irrelevant. The largest shifts in density at fixed pressure occur near the critical density of the mixture.

TABLE 1.

COEFFICIENTS OF THE REFERENCE HELMHOLTZ FREE ENERGY FUNCTION FOR ISOBUTANE

A00	27.849029
A01	58.1382356
A02	-.050937093
A03	2.5252496
A04	346.6523555
A05	2.5515510
A06	-53.012165
A07	3.3434600
A08	-.1194506
A09	-38.124442
X0	7.9688113

A10	3.0020353	Y0	.15388314
A11	-6.1529971	Y1	-.039169870
A12	-1.4570002	Y2	-.25198404-03
A13	.13342155	Y3	.98801205-06
A14	-.90043710-04	A20	3.6250

B11	-9.6153074	B23	-50.009149
B21	27.935713	B43	231.53999
B41	-125.69635	B63	-380.80769
B51	544.06550	B83	261.20687
B61	-479.48565	B14	-22.934154
B81	141.34133	B64	-14.503027
B12	-12.372626	B15	-10.167777
B32	-34.731447	B25	30.142576
B52	-575.69010	B55	-33.549797
B62	532.10066	B85	25.502886
B72	415.02454	B26	-.53441617
B82	-423.59614	B86	.037213690
B13	58.118955	Z0	.38796166

TABLE 2.

THE VAPOR PRESSURE OF ISOPENTANE AS MEASURED IN THE VISUAL CELL, IN THE PVT APPARATUS AND IN REF[Y1895].

	T DEG K	P EXP MPA	P CALC MPA	(EXP - CALC)/EXP %
YOUNG[Y1895]	293.150	0.0763	0.0770	-1.00
	313.150	0.1521	0.1517	0.24
	333.150	0.2715	0.2728	-0.48
	353.150	0.4510	0.4564	-1.18
	373.150	0.7127	0.7202	-1.05
	393.150	1.0690	1.0838	-1.38
	413.150	1.5511	1.5687	-1.14
	433.150	2.1758	2.2004	-1.13
	453.150	2.9691	3.0140	-1.51
PVT	303.165	0.1096	0.1097	-0.06
APPARATUS	313.500	0.1535	0.1534	0.07
	314.124	0.1565	0.1564	0.06
	314.125	0.1565	0.1565	0.02
	323.876	0.2104	0.2099	0.22
	334.278	0.2820	0.2813	0.22
	343.508	0.3597	0.3590	0.21
	343.508	0.3599	0.3590	0.25
	353.974	0.4666	0.4655	0.23
	364.475	0.5956	0.5947	0.16
	373.689	0.7292	0.7286	0.09
	373.951	0.7335	0.7327	0.12
	383.975	0.9037	0.9033	0.05
	394.015	1.1024	1.1021	0.03
	395.956	1.1435	1.1440	-0.04
	403.872	1.3264	1.3272	-0.06
	403.873	1.3261	1.3272	-0.08
	411.913	1.5328	1.5348	-0.13
	411.914	1.5345	1.5348	-0.02
	414.532	1.6058	1.6074	-0.10
	419.870	1.7606	1.7632	-0.15
VISUAL CELL	370.785	0.6838	0.6842	-0.06
	386.072	0.9431	0.9424	0.08
	400.529	1.2477	1.2473	0.03
	411.407	1.5208	1.5210	-0.02
	425.513	1.9387	1.9400	-0.07
	437.593	2.3593	2.3638	-0.19
	447.995	2.7761	2.7840	-0.29
	454.576	3.0728	3.0804	-0.25

TABLE 3.

COEXISTING DENSITIES OF ISOPENTANE [Y1895]

	SAT. LIQUID DENSITY MOL/DM3			SAT. VAPOR DENSITY MOL/DM3		
T,K	EXP	CALC	% DIFF	EXP	CALC	% DIFF
293.15	8.588	8.603	-0.17	0.0333	0.0328	+1.22
313.15	8.299	8.320	-0.25	0.0624	0.0625	-0.18
333.15	7.996	8.016	-0.26	0.1081	0.1078	+0.20
353.15	7.678	7.689	-0.14	0.1774	0.1793	-1.07
373.15	7.315	7.328	-0.17	0.2800	0.2823	-0.83
393.15	6.917	6.920	-0.03	0.4305	0.4324	-0.46
413.15	6.434	6.441	-0.11	0.6553	0.6572	-0.29
433.15	5.829	5.835	-0.09	1.0102	1.0083	+0.19
453.15	4.848	4.894	-0.94	1.7436	1.7289	+0.85

TABLE 4

CRITICAL PARAMETERS AND COEFFICIENTS OF THE SHAPE FACTORS USED TO CHARACTERISE THE HELMHOLTZ FUNCTION OF ISOPENTANE RELATIVE TO THAT OF ISOBUTANE.

$P_5^c = 3.3707$ MPA

$T_5^c = 460.51$ K

$a_1 = 1.$	$b_1 = 1.$
$a_2 = -.01$	$b_2 = -.067$
$a_3 = .0058$	$b_3 = -.02$
$a_4 = .015$	$b_4 = -.035$

TABLE 5.

COMBINATION RULES PARAMETERS USED TO CHARACTERISE THE HELMHOLTZ FUNCTION OF THE MIXTURE IN TERMS OF THOSE OF THE PURE COMPONENTS.

$k = 1.003$

$\ell = 1.005$

$a = 60000.$

TABLE 6.

CRITICAL LINE DATA FOR THE MIXTURE OF ISOBUTANE AND ISOPENTANE

X	CRIT.TEMP.,K		CRIT.PRESS.,MPA		CRIT.DENSITY, MOL/DM3	
	EXP	CALC	EXP	CALC	EXP	CALC
0.0	407.84	409.66	3.629	3.736	3.880	3.835
0.1000		416.23		3.777		3.776
0.2001	419.92	422.38	3.677	3.793	3.781	3.704
0.3493	428.71	430.90	3.650	3.780	3.662	3.607
0.5073	437.35	439.27	3.615	3.733	3.649	3.497
1.0	460.51	462.52	3.371	3.470	3.265	3.205

TABLE 7.

BUBBLE-POINT PRESSURES AND DENSITIES ALONG FIVE ISOTHERMS IN MIXTURES OF ISOBUTANE AND ISOPENTANE.

TEMP	MOLE FR.	PRESSURE, MPA			DENSITY, MOL/DM3		
K	X	EXP	CALC	% DIFF	EXP	CALC	% DIFF
288.890	0.0505	0.2524	0.2542	+0.71%	9.6108	9.6137	+0.03%
	0.0863	0.2513	0.2469	-1.78	9.5960	9.5800	-0.17
	0.1454	0.2399	0.2348	-2.17	9.5675	9.5302	-0.39
	0.4968	0.1685	0.1671	-0.83	9.3110	9.2960	-0.16
	0.5010	0.1653	0.1663	+0.59	9.3041	9.2931	-0.12
	0.5097	0.1632	0.1647	+0.90	9.2790	9.2868	-0.08
298.337	0.0505	0.3376	0.3382	+0.18	9.4233	9.4175	-0.06
	0.0863	0.3336	0.3286	-1.52	9.4206	9.3872	-0.36
	0.1454	0.3175	0.3128	-1.50	9.3800	9.3429	-0.40
	0.4968	0.2270	0.2247	-1.01	9.1483	9.1364	-0.13
	0.5010	0.2238	0.2237	-0.03	9.1449	9.1337	-0.12
308.327	0.0505	0.4490	0.4481	-0.20	9.2013	9.2007	-0.01
	0.0863	0.4405	0.4355	-1.15	9.1903	9.1746	-0.17
	0.1454	0.4197	0.4149	-1.15	9.1575	9.1366	-0.23
	0.4968	0.3045	0.3012	-1.09	8.9542	8.9616	+0.08
	0.5010	0.2994	0.2999	+0.18	8.9469	8.9593	+0.14
318.496	0.0505	0.5869	0.5854	-0.26	8.9993	8.9688	-0.34
	0.0863	0.5740	0.5691	-0.86	8.9839	8.9472	-0.41
	0.1454	0.5464	0.5426	-0.69	8.9630	8.9164	-0.52
	0.4968	0.4029	0.3980	-1.23	8.8137	8.7765	-0.42
	0.5010	0.3965	0.3963	-0.04	8.7712	8.7745	+0.04
	0.5097	0.3894	0.3930	+0.92	8.8082	8.7703	-0.43
328.480	0.0505	0.7498	0.7485	-0.17	8.7512	8.7279	-0.27
	0.0863	0.7324	0.7278	-0.63	8.7520	8.7113	-0.47
	0.1454	0.6978	0.6945	-0.48	8.7535	8.6882	-0.75
	0.4968	0.5145	0.5143	-0.04	8.6170	8.5862	-0.36
	0.5010	0.5139	0.5123	-0.31	8.5955	8.5846	-0.13

TABLE 8.

PRESSURE-DENSITY DATA ON THE 425 K BURNETT REFERENCE ISOTHERM FOR THE 90 MOL % ISOBUTANE-10 MOL % ISOPENTANE MIXTURE.

TEMP	PRESSURES, MPA			DENSITIES, MOL/DM3		
K	EXP	CALC	% DIFF	EXP	CALC	% DIFF
425.21	5.82331	5.80979	+.23	5.86066	5.86704	-.11
425.21	4.98785	4.98327	+.09	5.29857	5.30322	-.09
425.21	4.22749	4.23154	-.10	3.29031	3.27135	+.58
425.21	4.15247	4.15821	-.14	2.97473	2.95279	+.74
425.21	3.61751	3.62458	-.20	1.84725	1.83849	+.47
425.21	3.46254	3.46864	-.18	1.67008	1.66374	+.38
425.21	2.64167	2.64297	-.05	1.03709	1.03633	+.07
425.21	2.46662	2.46725	-.03	.93762	.93728	+.04
425.21	1.71716	1.71635	+.05	.58225	.58258	-.06
425.21	1.04504	1.04436	+.07	.32689	.32712	-.07
425.21	.95415	.95350	+.07	.29553	.29575	-.07
425.21	.61346	.61312	+.05	.18352	.18363	-.06
425.21	.55765	.55735	+.05	.16592	.16601	-.06
425.21	.35299	.35290	+.03	.10303	.10306	-.03
425.21	.32009	.32003	+.02	.09315	.09317	-.02

TABLE 9.

PVT DATA FOR THE 90 MOL % ISOBUTANE-10 MOL % ISOPENTANE MIXTURE ALONG FIVE ISOCHORES

TEMP	PRESSURES, MPA			DENSITIES, MOL/DM3			
K	EXP	CALC	% DIFF	EXP	CALC	% DIFF	
428.377	6.25193	6.23130	+.33	5.85988	5.86883	-.15	
425.215	5.82568	5.81045	+.26	5.86066	5.86783	-.12	
423.177	5.55282	5.54077	+.22	5.86116	5.86717	-.10	
421.145	5.28137	5.27319	+.15	5.86166	5.86600	-.07	
420.057	5.13681	5.13049	+.12	5.86193	5.86540	-.06	
419.046	5.00301	4.99826	+.10	5.86218	5.86487	-.05	
418.136	4.88298	4.87954	+.07	5.86240	5.86441	-.03	
417.074	4.74323	4.74139	+.04	5.86267	5.86378	-.02	
416.110	4.61644	4.61635	+.00	5.86290	5.86296	+.00	
415.072	4.48136	4.48212	-.02	5.86316	5.86267	+.01	
414.083	4.35215	4.35462	-.06	5.86340	5.86173	+.03	
413.571	4.28604	4.28878	-.06	5.86353	5.86164	+.03	
413.030	4.21576	4.21932	-.08	5.86366	5.86115	+.04	
413.076	4.22185	4.22522	-.08	5.86365	5.86128	+.04	
412.063	4.09079	4.09548	-.11	5.86390	5.86046	+.06	
411.048	3.96046	3.96593	-.14	5.86415	5.85996	+.07	
410.043	3.83198	3.83810	-.16	5.86440	5.85949	+.08	
409.079	3.70939	3.71593	-.18	5.86463	5.85916	+.09	
408.068	3.58129	3.58826	-.19	5.86488	5.85874	+.10	
407.061	3.45438	3.46159	-.21	5.86513	5.85845	+.11	
406.047	3.32798	3.33455	-.20	5.86538	5.85896	+.11	
405.035	3.20295	3.20827	-.17	5.86563	5.86013	+.09	
404.027	3.13053	3.13428	-.12	5.86588	5.20041	+12.80	2PH
403.549	3.10618	3.11004	-.12	5.86600	5.17274	+13.40	2PH
403.117	3.08431	3.08826	-.13	5.86612	5.14876	+13.93	2PH
402.534	3.05481	3.05906	-.14	5.86627	5.08753	+15.31	2PH
423.172	4.12199	4.12568	-.09	3.29059	3.26952	+.64	
421.139	4.01640	4.01988	-.09	3.29087	3.26544	+.77	
419.106	3.91014	3.91389	-.10	3.29115	3.25357	+1.14	
417.128	3.80633	3.81056	-.11	3.29142	3.22616	+1.98	
416.115	3.75285	3.75756	-.13	3.29156	3.19384	+2.97	
415.100	3.69888	3.70130	-.06	3.29170	3.21267	+2.46	2PH*
414.079	3.64352	3.64356	-.00	3.29185	3.29070	+.03	2PH*
413.060	3.58543	3.58656	-.03	3.29199	3.24978	+1.30	2PH*
412.053	3.52888	3.53087	-.06	3.29213	3.21456	+2.41	2PH*
411.035	3.47230	3.47525	-.08	3.29229	3.17432	+3.72	2PH
410.033	3.41760	3.42114	-.10	3.29245	3.14574	+4.66	2PH
409.070	3.36567	3.36974	-.12	3.29260	3.11821	+5.59	2PH
408.060	3.31176	3.31687	-.15	3.29277	3.08467	+6.75	2PH
407.049	3.25857	3.26310	-.14	3.29293	3.05501	+7.79	2PH
406.040	3.20612	3.21013	-.12	3.29309	3.02385	+8.90	2PH
405.030	3.15424	3.15780	-.11	3.29325	2.99093	+10.11	2PH
404.016	3.10318	3.10595	-.09	3.29342	2.97410	+10.74	2PH
403.007	3.05271	3.05501	-.08	3.29358	2.94388	+11.88	2PH

TABLE 9. (CONT.)

TEMP	PRESSURES, MPA			DENSITIES, MOL/DM3		
K	EXP	CALC	% DIFF	EXP	CALC	% DIFF
423.171	3.56607	3.57319	-.20	1.84741	1.83816	+.50
421.130	3.51420	3.52151	-.21	1.84757	1.83761	+.54
419.097	3.46228	3.46978	-.22	1.84773	1.83698	+.58
417.119	3.41143	3.41919	-.23	1.84788	1.83616	+.63
415.085	3.35879	3.36690	-.24	1.84804	1.83507	+.70
413.065	3.30597	3.31469	-.26	1.84819	1.83339	+.80
413.065	3.30621	3.31469	-.26	1.84819	1.83379	+.78
411.033	3.25260	3.26188	-.29	1.84835	1.83156	+.91
409.226	3.20457	3.21465	-.31	1.84849	1.82910	+1.05
409.073	3.20045	3.21064	-.32	1.84850	1.82880	+1.07
408.055	3.17334	3.18391	-.33	1.84858	1.82739	+1.15
407.525	3.15901	3.16997	-.35	1.84862	1.82624	+1.21
407.136	3.14845	3.15972	-.36	1.84865	1.82531	+1.26
406.624	3.13467	3.14620	-.37	1.84869	1.82433	+1.32
406.138	3.12141	3.13336	-.38	1.84873	1.82303	+1.39
405.613	3.10749	3.11946	-.39	1.84877	1.82248	+1.42
405.140	3.09445	3.10692	-.40	1.84881	1.82091	+1.51
425.201	2.64156	2.64286	-.05	1.03709	1.03632	+.07
421.123	2.59287	2.59413	-.05	1.03727	1.03650	+.07
417.114	2.54473	2.54588	-.05	1.03744	1.03671	+.07
413.057	2.49556	2.49667	-.04	1.03762	1.03688	+.07
409.062	2.44702	2.44783	-.03	1.03779	1.03724	+.05
405.018	2.39726	2.39795	-.03	1.03797	1.03747	+.05
400.993	2.34726	2.34785	-.02	1.03814	1.03770	+.04
396.995	2.29712	2.29759	-.02	1.03832	1.03795	+.04
392.953	2.24588	2.24624	-.02	1.03849	1.03819	+.03
388.980	2.19499	2.19521	-.01	1.03867	1.03848	+.02
386.973	2.16893	2.16920	-.01	1.03875	1.03851	+.02
386.972	2.16893	2.16918	-.01	1.03875	1.03852	+.02
384.963	2.14263	2.14299	-.02	1.03884	1.03850	+.03
421.142	1.69328	1.69243	+.05	.58234	.58271	-.06
417.132	1.66965	1.66874	+.05	.58244	.58284	-.07
413.074	1.64552	1.64466	+.05	.58254	.58292	-.07
409.127	1.62217	1.62113	+.06	.58264	.58311	-.08
405.133	1.59820	1.59720	+.06	.58274	.58320	-.08
399.016	1.56147	1.56030	+.07	.58289	.58345	-.10
388.984	1.49983	1.49906	+.05	.58313	.58353	-.07
378.989	1.43889	1.43699	+.13	.58338	.58442	-.18
369.030	1.37626	1.37393	+.17	.58362	.58501	-.24
363.044	1.33799	1.33533	+.20	.58377	.58543	-.29
360.100	1.31860	1.31614	+.19	.58384	.58543	-.27
359.693	1.31718	1.31348	+.28	.58385	.58625	-.41

TABLE 9. (CONT.)

POINTS WHICH APPEAR TO BE 2-PH FROM EXPT, AND 1-PH FROM SURFACE

TEMP	PRESSURES, MPA			DENSITIES, MOL/DM3		
K	EXP	CALC	% DIFF	EXP	CALC	% DIFF
131.432	3.07174	3.09039	-.61	1.84485	1.80305	2.27
130.969	3.04944	3.07811	-.94	1.84489	1.78081	3.47
130.462	3.02505	3.06464	-1.31	1.84493	1.75670	4.78
129.941	2.99996	3.05078	-1.69	1.84497	1.73209	6.12
110.808	2.12265	2.12982	-.34	1.03888	1.03207	.66
109.810	2.08795	2.11671	-1.38	1.03893	1.01159	2.63
109.804	2.08771	2.11663	-1.39	1.03893	1.01144	2.65
108.794	2.05273	2.10332	-2.46	1.03898	.99090	4.63
107.848	2.02050	2.09080	-3.48	1.03902	.97218	6.43
106.849	1.98657	2.07754	-4.58	1.03906	.95256	8.33
85.954	1.30345	1.30963	-.47	.58387	.57986	.69
85.938	1.30279	1.30952	-.52	.58387	.57950	.75
85.373	1.28991	1.30580	-1.23	.58388	.57355	1.77
84.851	1.27751	1.30237	-1.95	.58389	.56772	2.77
83.946	1.25626	1.29641	-3.20	.58392	.55778	4.48
81.951	1.21056	1.28321	-6.00	.58397	.53653	8.12

THE POINTS IDENTIFIED WITH '2PH' REPRESENT MEASUREMENTS IN THE 2-PHASE REGION. THE IDENTIFICATION '2PH*' REPRESENTS POINTS WHICH ARE BELIEVED TO BE SINGLE-PHASE POINTS BUT IN THE 2-PHASE REGION OF THE SURFACE. (THOSE WITH T›140 C ARE ALSO IN THE CRITICAL REGION.)

TABLE 10.

BUBBLE AND DEW POINTS FROM PVT DATA

	TEMP	PRESSURES, MPA			DENSITIES, MOL/DM3		
	K	EXP	CALC	% DIFF	EXP	CALC	% DIFF
B	404.753	3.16785	3.17316	-.17	5.86568	5.86010	+.10
D	404.946	3.08925	3.10180	-.41	1.84890	1.82059	+1.53
D	384.273	2.13373	2.13396	-.01	1.03887	1.03866	+.02
D	361.148	1.32575	1.32299	+.21	.58381	.58558	-.30

APPENDIX A.

Tables of Values for the Thermodynamic Properties of the 0.1 Mole Fraction Isopentane in Isobutane Mixture in SI Units

Table A1 presents properties for both the dew-points and the bubble-points and at increments of both temperature and pressure. Also shown are the concentrations and thermodynamic properties of the coexisting phase.

Table A2 presents properties along isobars at increments of temperature from the compressed liquid through the superheated vapor. At the bubble-points and dew-points the concentrations and values for the thermodynamic properties of the coexisting phase are also shown.

The intervals for both of these sets of tables are chosen such that for most purposes a linear interpolation between the values presented will give values for the thermodynamic properties to within the uncertainty of the calculated values. In order to facilitate smoother interpolations, the values of the properties presented here have from one half to one more significant figure than would be justified by the uncertainty of these calculated values.

TABLE A1 THERMODYNAMIC PROPERTIES ON THE VAPOR-LIQUID PHASE BOUNDARY

THE BUBBLE POINT AT INCREMENTS OF PRESSURE

	LIQUID, X 0.1000				COEXISTING VAPOR			
P	T	V	H	S	X	V	H	S
MPA	DEG K	M3 KG	KJ KG	KJ KG K		M3/KG	KJ/KG	KJ/KG-K
0.04	241.69	0.0016099	503.7	-1.4813	0.0203	0.8440	-110.0	0.0972
0.05	246.56	0.0016230	-493.4	-1.4390	0.0214	0.6861	-103.7	0.0926
0.06	250.71	0.0016346	-484.5	-1.4033	0.0224	0.5793	-98.3	0.0896
0.08	257.59	0.0016540	-469.5	-1.3448	0.0240	0.4433	-89.3	0.0863
0.10	263.23	0.0016707	-457.1	-1.2973	0.0253	0.3601	-81.9	0.0850
0.10133	263.57	0.0016718	-456.3	-1.2946	0.0254	0.3556	-81.4	0.0850
0.15	274.24	0.0017053	-432.5	-1.2061	0.0281	0.2464	-67.3	0.0856
0.20	282.69	0.0017337	-413.1	-1.1368	0.0302	0.18790	-56.1	0.0886
0.25	289.66	0.0017586	-396.8	-1.0803	0.0321	0.15209	-46.9	0.0923
0.30	295.64	0.0017811	-382.6	-1.0321	0.0337	0.12780	-39.0	0.0964
0.40	305.64	0.0018216	-358.4	-0.9522	0.0365	0.09686	-25.9	0.1046
0.50	313.91	0.0018577	-337.8	-0.8865	0.0389	0.07789	-15.1	0.1124
0.60	321.03	0.0018915	-319.7	-0.8302	0.0410	0.06502	-6.0	0.1197
0.70	327.31	0.0019235	-303.5	-0.7805	0.0430	0.05569	1.9	0.1266
0.80	332.97	0.0019543	-288.5	-0.7359	0.0447	0.04861	8.9	0.1329
0.90	338.12	0.0019843	-274.7	-0.6953	0.0464	0.04305	15.2	0.1387
1.00	342.87	0.002014	-261.7	-0.6577	0.0480	0.03855	20.9	0.1441
1.20	351.42	0.002072	-237.8	-0.5901	0.0509	0.03171	30.8	0.1537
1.40	358.98	0.002130	-216.0	-0.5300	0.0537	0.02674	39.1	0.1618
1.60	365.79	0.002190	-195.8	-0.4754	0.0562	0.02295	46.1	0.1686
1.80	372.00	0.002251	-176.8	-0.4251	0.0587	0.019948	52.1	0.1741
2.00	377.73	0.002316	-158.7	-0.3781	0.0611	0.017510	57.1	0.1783
2.20	383.05	0.002385	-141.3	-0.3337	0.0634	0.015476	61.1	0.1812
2.40	388.03	0.002460	-124.5	-0.2914	0.0658	0.013743	64.3	0.1826
2.60	392.71	0.002544	-108.1	-0.2505	0.0682	0.012235	66.5	0.1825
2.80	397.13	0.002638	-91.8	-0.2106	0.0708	0.010897	67.6	0.1805
3.00	401.33	0.002750	-75.4	-0.1710	0.0735	0.009682	67.6	0.1761
3.20	405.32	0.002887	-58.7	-0.1308	0.0766	0.008548	65.8	0.1684
3.40	409.13	0.003070	-40.8	-0.0883	0.0804	0.007441	61.7	0.1555
3.50	410.98	0.003193	30.9	-0.0651	0.0828	0.006871	58.1	0.1458
3.60	412.80	0.003359	19.9	-0.0391	0.0857	0.006259	52.7	0.1321
* 3.70	414.62	0.003614	-6.2	-0.0069	0.0900	0.005526	43.5	0.1097

TABLE A1. THERMODINAMIC PROPERTIES ON THE VAPOR LIQUID PHASE BOUNDARY

THE DEW POINT AT INCREMENTS OF PRESSURE

	VAPOR, X = 0.1000				------ COEXISTING LIQUID ------			
P	T	V	H	S	X	V	H	S
MPA	DEG K	M3/KG	KJ KG	KJ/KG-K		M3/KG	KJ/KG	KJ/KG-K
0.04	247.39	0.8476	-114.5	0.1172	0.3580	0.001572	-527.1	-1.4593
0.05	252.14	0.6885	-108.1	0.1123	0.3458	0.001586	-515.6	-1.4175
0.06	256.19	0.5810	-102.6	0.1089	0.3358	0.001599	-505.7	-1.3821
0.08	262.90	0.4442	-93.5	0.1050	0.3201	0.001620	-489.2	-1.3241
0.10	268.41	0.3606	-86.0	0.1032	0.3081	0.001638	-475.6	-1.2771
0.10133	268.74	0.3561	-85.6	0.1032	0.3074	0.001639	-474.8	-1.2746
0.15	279.14	0.2464	-71.2	0.1031	0.2864	0.001675	-448.6	-1.1863
0.20	287.39	0.18776	-59.8	0.1055	0.2711	0.001706	-427.6	-1.1173
0.25	294.19	0.15186	-50.4	0.1087	0.2594	0.001732	-410.0	-1.0612
0.30	300.02	0.12756	-42.4	0.1123	0.2500	0.001755	-394.8	-1.0134
0.40	309.77	0.09658	-29.1	0.1198	0.2352	0.001797	-369.0	-0.9342
0.50	317.84	0.07762	-18.1	0.1270	0.2239	0.001835	-347.3	-0.8692
0.60	324.79	0.06477	-8.9	0.1337	0.2148	0.001870	-328.3	-0.8135
0.70	330.92	0.05546	-0.8	0.1400	0.2072	0.001903	-311.2	-0.7645
0.80	336.44	0.04838	6.3	0.1459	0.2007	0.001934	-295.7	-0.7205
0.90	341.47	0.04286	12.7	0.1513	0.1950	0.001965	-281.3	-0.6803
1.00	346.11	0.03837	18.5	0.1563	0.1899	0.001995	-267.8	-0.6433
1.20	354.45	0.03155	28.6	0.1652	0.1812	0.002054	-243.1	-0.5766
1.40	361.83	0.02661	37.1	0.1728	0.1739	0.002113	-220.6	-0.5173
1.60	368.47	0.02284	44.4	0.1790	0.1675	0.002173	-199.8	-0.4635
1.80	374.53	0.019855	50.5	0.1840	0.1619	0.002235	-180.4	-0.4139
2.00	380.11	0.017432	55.6	0.1878	0.1567	0.002301	-161.9	-0.3676
2.20	385.29	0.015411	59.9	0.1902	0.1519	0.002370	-144.1	-0.3239
2.40	390.13	0.013689	63.2	0.1912	0.1473	0.002446	-127.0	-0.2823
2.60	394.66	0.012192	65.6	0.1906	0.1429	0.002529	-110.2	-0.2422
2.80	398.93	0.010863	66.9	0.1881	0.1385	0.002624	-93.7	-0.2030
3.00	402.96	0.009657	66.9	0.1831	0.1339	0.002735	-77.1	-0.1642
3.20	406.76	0.008532	65.4	0.1748	0.1291	0.002872	-60.0	-0.1250
3.40	410.34	0.007434	61.4	0.1611	0.1236	0.003054	-41.9	-0.0837
3.50	412.04	0.006869	57.9	0.1508	0.1203	0.003177	-32.0	-0.0612
* 3.60	413.68	0.006262	52.7	0.1365	0.1164	0.003341	-20.8	-0.0362
* 3.70	415.22	0.005535	43.6	0.1132	0.1111	0.003594	-7.1	-0.0054

TABLE A1. THERMODYNAMIC PROPERTIES ON THE VAPOR LIQUID PHASE BOUNDARY

THE BUBBLE POINT AT INCREMENTS OF TEMPERATURE

	LIQUID, X = 0.1000				COEXISTING VAPOR			
T	P	V	H	S	X	V	H	S
DEG K	MPA	M3/KG	KJ/KG	KJ/KG-K		M3/KG	KJ/KG	KJ/KG-K
240.0	0.03692	0.0016054	-507.3	-1.4963	0.0199	0.9090	-112.2	0.0990
245.0	0.04660	0.0016187	496.7	-1.4527	0.0211	0.7324	-105.8	0.0939
250.0	0.05819	0.0016324	-486.0	-1.4095	0.0222	0.5959	-99.3	0.0900
255.0	0.07194	0.0016465	-475.1	-1.3668	0.0234	0.4892	-92.7	0.0872
260.0	0.08812	0.0016611	-464.2	1.3245	0.0246	0.4050	-86.2	0.0855
263.57	0.10133	0.0016718	456.3	-1.2946	0.0254	0.3556	-81.4	0.0849
265.0	0.10701	0.0016761	-453.2	-1.2827	0.0258	0.3379	-79.6	0.0848
270.0	0.12889	0.0016917	-442.0	-1.2411	0.0270	0.2840	-73.0	0.0848
275.0	0.15408	0.0017078	-430.7	-1.1999	0.0283	0.2402	-66.3	0.0857
280.0	0.18288	0.0017245	-419.3	-1.1588	0.0295	0.20446	-59.7	0.0874
285.0	0.2156	0.0017418	-407.7	-1.1181	0.0308	0.17499	-53.1	0.0897
290.0	0.2527	0.0017599	-396.0	-1.0776	0.0322	0.15056	-46.4	0.0925
295.0	0.2943	0.0017786	-384.1	-1.0373	0.0335	0.13016	-39.8	0.0959
300.0	0.3410	0.0017983	-372.1	-0.9972	0.0349	0.11302	-33.2	0.0997
305.0	0.3930	0.0018188	-359.9	-0.9573	0.0363	0.09854	-26.7	0.1040
310.0	0.4507	0.0018402	-347.6	-0.9176	0.0377	0.08624	-20.2	0.1086
315.0	0.5145	0.0018627	-335.1	-0.8779	0.0392	0.07573	-13.7	0.1135
320.0	0.5847	0.0018864	-322.4	-0.8383	0.0407	0.06671	-7.3	0.1186
325.0	0.6619	0.0019114	-309.5	-0.7989	0.0422	0.0589288	-1.0	0.1240
330.0	0.7463	0.0019379	-296.4	-0.7594	0.0438	0.0521880	5.3	0.1295
335.0	0.8384	0.0019659	-283.1	-0.7200	0.0454	0.0463225	11.4	0.1351
340.0	0.9386	0.0019957	-269.6	-0.6805	0.0470	0.0411971	17.5	0.1408
345.0	1.0473	0.002028	-255.8	-0.6410	0.0487	0.036700	23.4	0.1465
350.0	1.1649	0.002062	-241.8	-0.6014	0.0504	0.032739	29.2	0.1521
355.0	1.2919	0.002099	-227.6	-0.5617	0.0522	0.029236	34.8	0.1576
360.0	1.4287	0.002139	-213.0	-0.5219	0.0540	0.026126	40.2	0.1628
365.0	1.5758	0.002182	-198.2	-0.4818	0.0559	0.023353	45.3	0.1678
370.0	1.7337	0.002230	-183.0	-0.4414	0.0579	0.020870	50.2	0.1724
375.0	1.9027	0.002284	-167.4	-0.4006	0.0599	0.018637	54.7	0.1763
380.0	2.084	0.002344	-151.4	-0.3593	0.0620	0.016618	58.8	0.1796
385.0	2.277	0.002413	-134.9	-0.3173	0.0643	0.014781	62.4	0.1819
390.0	2.483	0.002493	-117.7	-0.2744	0.0668	0.013096	65.3	0.1827
395.0	2.702	0.002590	-99.8	-0.2301	0.0695	0.011534	67.2	0.1817
400.0	2.936	0.002711	-80.8	-0.1838	0.0726	0.010063	67.7	0.1778
405.0	3.184	0.002874	-60.1	-0.1341	0.0764	0.008638	66.0	0.1691
410.0	3.447	0.003124	-36.3	-0.0777	0.0815	0.007178	60.1	0.1513
* 415.0	3.721	0.003693	-2.6	0.0016	0.0913	0.005330	40.3	0.1023

TABLE A1. THERMODYNAMIC PROPERTIES ON THE VAPOR LIQUID PHASE BOUNDARY

THE DEW POINT AT INCREMENTS OF TEMPERATURE

	LIQUID, X = 0.1000				---- COEXISTING LIQUID ----			
T	P	V	H	S	X	V	H	S
DEG K	MPA	M3/KG	KJ/KG	KJ/KG-K		M3/KG	KJ/KG	KJ/KG-K
240.0	0.02766	1.1942	-124.3	0.1274	0.3782	0.001550	-544.6	-1.5261
245.0	0.03560	0.9442	-117.7	0.1201	0.3644	0.001564	-532.6	-1.4812
250.0	0.04527	0.7550	-111.0	0.1143	0.3512	0.001580	-520.5	-1.4368
255.0	0.05691	0.6100	-104.2	0.1097	0.3387	0.001595	-508.4	-1.3929
260.0	0.07080	0.4976	-97.5	0.1064	0.3268	0.001611	-496.2	-1.3495
265.0	0.08722	0.4096	-90.7	0.1041	0.3155	0.001627	-483.9	-1.3065
268.74	0.10133	0.3560	-85.6	0.1031	0.3074	0.001639	-474.7	-1.2746
270.0	0.10646	0.3399	-83.8	0.1028	0.3047	0.001644	-471.5	-1.2639
275.0	0.12885	0.2842	-77.0	0.1025	0.2945	0.001661	-459.0	-1.2215
280.0	0.15471	0.2393	-70.0	0.1032	0.2847	0.001678	-446.4	-1.1793
285.0	0.18438	0.2028	-63.1	0.1045	0.2754	0.001697	-433.6	-1.1374
290.0	0.2182	0.17283	-56.2	0.1065	0.2665	0.001715	-420.8	-1.0959
295.0	0.2566	0.14814	-49.3	0.1091	0.2581	0.001735	-407.9	-1.0546
300.0	0.2998	0.12761	-42.4	0.1123	0.2500	0.001755	-394.8	-1.0137
305.0	0.3484	0.11043	-35.6	0.1159	0.2423	0.001776	-381.7	-0.9730
310.0	0.4026	0.09598	-28.8	0.1199	0.2349	0.001798	-368.4	-0.9325
315.0	0.4629	0.08374	-22.0	0.1243	0.2278	0.001821	-355.0	-0.8922
320.0	0.5296	0.07333	-15.3	0.1290	0.2210	0.001845	-341.4	-0.8520
325.0	0.6033	0.06442	-8.6	0.1339	0.2145	0.001871	-327.7	-0.8119
330.0	0.6843	0.05675	-2.0	0.1390	0.2083	0.001897	-313.8	-0.7719
335.0	0.7730	0.05013	4.5	0.1443	0.2023	0.001926	-299.7	-0.7320
340.0	0.8699	0.04439	10.9	0.1497	0.1966	0.001955	-285.5	-0.6921
345.0	0.9754	0.03938	17.2	0.1551	0.1911	0.001987	-271.0	-0.6522
350.0	1.0900	0.03500	23.3	0.1605	0.1858	0.002021	-256.3	-0.6123
355.0	1.2142	0.03115	29.3	0.1658	0.1806	0.002058	-241.4	-0.5722
360.0	1.3484	0.027745	35.1	0.1709	0.1756	0.002098	-226.2	-0.5321
365.0	1.4931	0.024729	40.6	0.1758	0.1708	0.002141	-210.8	-0.4917
370.0	1.6488	0.022044	45.9	0.1803	0.1661	0.002188	-195.0	-0.4511
375.0	1.8162	0.019640	50.9	0.1843	0.1614	0.002240	-178.8	-0.4101
380.0	1.9958	0.017478	55.5	0.1877	0.1568	0.002299	-162.2	-0.3686
385.0	2.188	0.015520	59.6	0.1900	0.1522	0.002366	-145.2	-0.3265
390.0	2.395	0.013733	63.1	0.1912	0.1475	0.002443	-127.5	-0.2835
395.0	2.615	0.012085	65.7	0.1905	0.1426	0.002536	-109.0	-0.2392
400.0	2.852	0.010540	67.0	0.1870	0.1373	0.002651	-89.4	-0.1930
405.0	3.106	0.009054	66.4	0.1792	0.1314	0.002804	-68.1	-0.1436
410.0	3.381	0.007541	61.9	0.1627	0.1241	0.003033	-43.8	-0.0879
* 415.0	3.685	0.005660	45.4	0.1178	0.1121	0.003546	-9.4	-0.0107

Table A2. THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

VAPOR, P = 0.01 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	3.3352	-123.5	0.2719	0.0332	0.000042	1.399
250.0	3.4761	-109.4	0.3296	0.0346	0.000040	1.443
260.0	3.6170	-94.8	0.3867	0.0360	0.000039	1.488
270.0	3.7577	-79.8	0.4433	0.0374	0.000037	1.534
280.0	3.8984	-64.2	0.4999	0.0389	0.000036	1.580
290.0	4.0389	-48.2	0.5561	0.0403	0.000035	1.626
300.0	4.1794	-31.7	0.6120	0.0417	0.000034	1.673
310.0	4.3198	-14.7	0.6677	0.0431	0.000032	1.720
320.0	4.4601	2.7	0.7230	0.0445	0.000031	1.767
330.0	4.6003	20.6	0.7782	0.0459	0.000030	1.814
340.0	4.7406	39.0	0.8330	0.0473	0.000030	1.861
350.0	4.8807	57.8	0.8877	0.0487	0.000029	1.908
360.0	5.0209	77.2	0.9421	0.0501	0.000028	1.955
370.0	5.1610	96.9	0.9963	0.0515	0.000027	2.001
380.0	5.3010	117.2	1.0503	0.0529	0.000026	2.048
390.0	5.4411	137.9	1.1040	0.0543	0.000026	2.093
400.0	5.5811	159.0	1.1576	0.0558	0.000025	2.139
410.0	5.7211	180.7	1.2110	0.0572	0.000024	2.184
420.0	5.8611	202.7	1.2641	0.0586	0.000024	2.228
430.0	6.0010	225.2	1.3171	0.0600	0.000023	2.272
440.0	6.1409	248.2	1.3698	0.0614	0.000023	2.316
450.0	6.2809	271.5	1.4223	0.0628	0.000022	2.359
460.0	6.4208	295.3	1.4746	0.0642	0.000022	2.401
470.0	6.5607	319.6	1.5267	0.0656	0.000021	2.443
480.0	6.7005	344.2	1.5786	0.0670	0.000021	2.484
490.0	6.8404	369.2	1.6302	0.0684	0.000020	2.524
500.0	6.9803	394.7	1.6816	0.0698	0.000020	2.564
510.0	7.120	420.5	1.7327	0.0712	0.000020	2.603
520.0	7.260	446.7	1.7836	0.0726	0.000019	2.642
530.0	7.400	473.3	1.8343	0.0740	0.000019	2.680
540.0	7.540	500.3	1.8847	0.0754	0.000019	2.717
550.0	7.679	527.6	1.9348	0.0768	0.000018	2.754
560.0	7.819	555.3	1.9848	0.0782	0.000018	2.790
570.0	7.959	583.4	2.0344	0.0796	0.000018	2.826
580.0	8.099	611.8	2.0839	0.0810	0.000017	2.861
590.0	8.239	640.6	2.1331	0.0824	0.000017	2.895
600.0	8.378	669.7	2.1820	0.0838	0.000017	2.929

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.04 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001606	-507.3	-1.4962	0.774	0.788	2.109
241.69	0.001610	-503.69	-1.4813	0.763	0.781	2.117
COEXISTING VAPOR (x=.0203)						
241.69	0.8440	-110.0	0.0972	0.0331	0.000172	1.419
			VAPOR			
COEXISTING LIQUID (x=.3580)						
247.39	0.001572	-527.1	-1.4593	0.766	0.764	2.093
247.39	0.8476	-114.5	0.1172	0.0332	0.000168	1.442
250.0	0.8570	-110.7	0.1323	0.0336	0.000166	1.453
260.0	0.8932	-96.1	0.1898	0.0351	0.000159	1.497
270.0	0.9292	-81.0	0.2468	0.0366	0.000152	1.542
280.0	0.9651	-65.3	0.3036	0.0381	0.000146	1.587
290.0	1.0009	-49.2	0.3601	0.0396	0.000141	1.633
300.0	1.0366	-32.7	0.4163	0.0410	0.000136	1.679
310.0	1.0722	-15.6	0.4721	0.0425	0.000131	1.725
320.0	1.1078	1.9	0.5276	0.0439	0.000127	1.772
330.0	1.1433	19.8	0.5829	0.0454	0.000123	1.818
340.0	1.1788	38.2	0.6379	0.0468	0.000119	1.865
350.0	1.2142	57.1	0.6926	0.0483	0.000116	1.912
360.0	1.2496	76.5	0.7471	0.0497	0.000112	1.958
370.0	1.2850	96.3	0.8014	0.0511	0.000109	2.005
380.0	1.3203	116.6	0.8555	0.0525	0.000106	2.051
390.0	1.3556	137.3	0.9094	0.0540	0.000104	2.096
400.0	1.3908	158.5	0.9630	0.0554	0.000101	2.141
410.0	1.4261	180.1	1.0164	0.0568	0.000098	2.186
420.0	1.4613	202.2	1.0697	0.0582	0.000096	2.231
430.0	1.4965	224.7	1.1227	0.0597	0.000094	2.274
440.0	1.5317	247.7	1.1754	0.0611	0.000092	2.318
450.0	1.5668	271.1	1.2280	0.0625	0.000089	2.360
460.0	1.6020	294.9	1.2803	0.0639	0.000088	2.403
470.0	1.6371	319.1	1.3325	0.0653	0.000086	2.444
480.0	1.6722	343.8	1.3843	0.0667	0.000084	2.485
490.0	1.7074	368.8	1.4360	0.0681	0.000082	2.526
500.0	1.7425	394.3	1.4874	0.0696	0.000080	2.565
510.0	1.7776	420.1	1.5386	0.0710	0.000079	2.605
520.0	1.8126	446.4	1.5895	0.0724	0.000077	2.643
530.0	1.8477	473.0	1.6402	0.0738	0.000076	2.681
540.0	1.8828	499.9	1.6906	0.0752	0.000074	2.718
550.0	1.9178	527.3	1.7408	0.0766	0.000073	2.755
560.0	1.9529	555.0	1.7907	0.0780	0.000072	2.791
570.0	1.9880	583.1	1.8404	0.0794	0.000070	2.827
580.0	2.0230	611.5	1.8899	0.0808	0.000069	2.862
590.0	2.0580	640.3	1.9391	0.0822	0.000068	2.896
600.0	2.0931	669.4	1.9880	0.0836	0.000067	2.930

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.05 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001606	-507.3	-1.4962	0.774	0.788	2.109
246.56	0.001623	-493.4	-1.4390	0.734	0.760	2.140
COEXISTING VAPOR (x=.0214)						
246.56	0.6861	-103.7	0.0926	0.0335	0.000212	1.444
			VAPOR			
COEXISTING LIQUID (x=.3458)						
252.14	0.001586	-515.6	-1.4175	0.738	0.745	2.119
252.14	0.6885	-108.1	0.1123	0.0336	0.000207	1.467
260.0	0.7115	-96.5	0.1575	0.0348	0.000200	1.501
270.0	0.7405	-81.4	0.2146	0.0363	0.000192	1.545
280.0	0.7695	-65.7	0.2715	0.0378	0.000184	1.590
290.0	0.7983	-49.6	0.3281	0.0393	0.000177	1.635
300.0	0.8270	-33.0	0.3844	0.0408	0.000171	1.681
310.0	0.8557	-15.9	0.4403	0.0423	0.000165	1.727
320.0	0.8843	1.6	0.4958	0.0437	0.000160	1.773
330.0	0.9129	19.5	0.5512	0.0452	0.000155	1.820
340.0	0.9414	38.0	0.6062	0.0466	0.000150	1.867
350.0	0.9698	56.9	0.6610	0.0481	0.000145	1.913
360.0	0.9982	76.2	0.7155	0.0495	0.000141	1.959
370.0	1.0266	96.1	0.7699	0.0510	0.000137	2.006
380.0	1.0549	116.4	0.8240	0.0524	0.000133	2.052
390.0	1.0832	137.1	0.8779	0.0538	0.000130	2.097
400.0	1.1115	158.3	0.9315	0.0553	0.000126	2.142
410.0	1.1397	179.9	0.9850	0.0567	0.000123	2.187
420.0	1.1680	202.0	1.0382	0.0581	0.000120	2.231
430.0	1.1962	224.6	1.0912	0.0596	0.000117	2.275
440.0	1.2244	247.5	1.1440	0.0610	0.000115	2.318
450.0	1.2526	270.9	1.1966	0.0624	0.000112	2.361
460.0	1.2807	294.8	1.2490	0.0638	0.000110	2.403
470.0	1.3089	319.0	1.3011	0.0652	0.000107	2.445
480.0	1.3370	343.7	1.3530	0.0667	0.000105	2.486
490.0	1.3652	368.7	1.4046	0.0681	0.000103	2.526
500.0	1.3933	394.2	1.4561	0.0695	0.000101	2.566
510.0	1.4214	420.0	1.5072	0.0709	0.000099	2.605
520.0	1.4495	446.2	1.5582	0.0723	0.000097	2.644
530.0	1.4776	472.8	1.6088	0.0737	0.000095	2.682
540.0	1.5057	499.8	1.6593	0.0751	0.000093	2.719
550.0	1.5337	527.2	1.7095	0.0766	0.000091	2.756
560.0	1.5618	554.9	1.7594	0.0780	0.000090	2.792
570.0	1.5899	583.0	1.8091	0.0794	0.000088	2.827
580.0	1.6179	611.4	1.8586	0.0808	0.000087	2.862
590.0	1.6460	640.2	1.9078	0.0822	0.000085	2.897
600.0	1.6740	669.3	1.9568	0.0836	0.000084	2.930

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.06 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001605	-507.3	-1.4962	0.774	0.789	2.109
250.0	0.001633	-486.0	-1.4094	0.713	0.745	2.155
250.71	0.001635	-484.5	-1.4033	0.709	0.742	2.158
COEXISTING VAPOR (x=.0224)						
250.71	0.5793	-98.3	0.0896	0.0338	0.000252	1.466
			VAPOR			
COEXISTING LIQUID (x=.3358)						
256.19	0.001599	-505.7	-1.3821	0.713	0.728	2.140
256.19	0.5810	-102.6	0.1089	0.0339	0.000246	1.488
260.0	0.5903	-97.0	0.1309	0.0345	0.000242	1.505
270.0	0.6147	-81.8	0.1881	0.0360	0.000232	1.548
280.0	0.6390	-66.1	0.2451	0.0376	0.000223	1.593
290.0	0.6632	-50.0	0.3018	0.0391	0.000214	1.638
300.0	0.6873	-33.3	0.3581	0.0406	0.000206	1.683
310.0	0.7113	-16.3	0.4141	0.0421	0.000199	1.729
320.0	0.7353	1.3	0.4698	0.0435	0.000192	1.775
330.0	0.7592	19.3	0.5251	0.0450	0.000186	1.822
340.0	0.7830	37.7	0.5802	0.0465	0.000180	1.868
350.0	0.8068	56.6	0.6351	0.0479	0.000175	1.914
360.0	0.8306	76.0	0.6896	0.0494	0.000170	1.961
370.0	0.8543	95.9	0.7440	0.0508	0.000165	2.007
380.0	0.8780	116.1	0.7981	0.0523	0.000160	2.053
390.0	0.9016	136.9	0.8520	0.0537	0.000156	2.098
400.0	0.9252	158.1	0.9057	0.0552	0.000152	2.143
410.0	0.9488	179.8	0.9592	0.0566	0.000148	2.188
420.0	0.9724	201.9	1.0125	0.0580	0.000145	2.232
430.0	0.9960	224.4	1.0655	0.0595	0.000141	2.276
440.0	1.0195	247.4	1.1183	0.0609	0.000138	2.319
450.0	1.0431	270.8	1.1709	0.0623	0.000135	2.362
460.0	1.0666	294.6	1.2233	0.0637	0.000132	2.404
470.0	1.0901	318.9	1.2754	0.0652	0.000129	2.445
480.0	1.1135	343.5	1.3273	0.0666	0.000126	2.486
490.0	1.1370	368.6	1.3790	0.0680	0.000123	2.527
500.0	1.1605	394.0	1.4304	0.0694	0.000121	2.566
510.0	1.1839	419.9	1.4816	0.0708	0.000119	2.605
520.0	1.2074	446.1	1.5325	0.0723	0.000116	2.644
530.0	1.2308	472.7	1.5832	0.0737	0.000114	2.682
540.0	1.2542	499.7	1.6337	0.0751	0.000112	2.719
550.0	1.2777	527.1	1.6839	0.0765	0.000110	2.756
560.0	1.3011	554.8	1.7338	0.0779	0.000108	2.792
570.0	1.3245	582.9	1.7835	0.0793	0.000106	2.828
580.0	1.3479	611.3	1.8330	0.0807	0.000104	2.862
590.0	1.3713	640.1	1.8822	0.0821	0.000102	2.897
600.0	1.3947	669.2	1.9312	0.0836	0.000100	2.931

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.08 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001605	-507.3	-1.4963	0.775	0.789	2.109
250.0	0.001632	-486.0	-1.4095	0.714	0.746	2.155
257.59	0.001654	-469.5	-1.3448	0.666	0.712	2.188
COEXISTING VAPOR (x=.0240)						
257.59	0.4433	-89.3	0.0863	0.0343	0.000331	1.503
			VAPOR			
COEXISTING LIQUID (x=.3201)						
262.90	0.001620	-489.2	-1.3241	0.671	0.700	2.173
262.90	0.4442	-93.5	0.1050	0.0343	0.000325	1.525
270.0	0.4574	-82.6	0.1458	0.0355	0.000314	1.555
280.0	0.4760	-66.9	0.2031	0.0370	0.000301	1.599
290.0	0.4944	-50.7	0.2600	0.0386	0.000289	1.643
300.0	0.5127	-34.0	0.3165	0.0401	0.000278	1.688
310.0	0.5309	-16.9	0.3726	0.0416	0.000268	1.733
320.0	0.5490	0.7	0.4283	0.0431	0.000259	1.779
330.0	0.5671	18.7	0.4838	0.0446	0.000250	1.825
340.0	0.5851	37.2	0.5390	0.0461	0.000242	1.871
350.0	0.6031	56.1	0.5939	0.0476	0.000235	1.917
360.0	0.6210	75.5	0.6486	0.0491	0.000228	1.963
370.0	0.6389	95.4	0.7030	0.0506	0.000221	2.009
380.0	0.6568	115.7	0.7572	0.0520	0.000215	2.055
390.0	0.6746	136.5	0.8112	0.0535	0.000209	2.100
400.0	0.6924	157.7	0.8649	0.0549	0.000204	2.145
410.0	0.7102	179.4	0.9184	0.0564	0.000199	2.190
420.0	0.7280	201.5	0.9717	0.0578	0.000194	2.234
430.0	0.7457	224.1	1.0248	0.0593	0.000189	2.277
440.0	0.7635	247.1	1.0776	0.0607	0.000184	2.320
450.0	0.7812	270.5	1.1303	0.0621	0.000180	2.363
460.0	0.7988	294.3	1.1826	0.0636	0.000176	2.405
470.0	0.8165	318.6	1.2348	0.0650	0.000172	2.446
480.0	0.8342	343.3	1.2867	0.0664	0.000169	2.487
490.0	0.8518	368.3	1.3384	0.0679	0.000165	2.528
500.0	0.8695	393.8	1.3899	0.0693	0.000162	2.567
510.0	0.887	419.7	1.4411	0.0707	0.000158	2.606
520.0	0.905	445.9	1.4920	0.0721	0.000155	2.645
530.0	0.922	472.5	1.5427	0.0736	0.000152	2.683
540.0	0.940	499.5	1.5932	0.0750	0.000149	2.720
550.0	0.958	526.9	1.6434	0.0764	0.000147	2.757
560.0	0.975	554.6	1.6934	0.0778	0.000144	2.793
570.0	0.993	582.7	1.7431	0.0792	0.000141	2.828
580.0	1.010	611.1	1.7926	0.0806	0.000139	2.863
590.0	1.028	639.9	1.8418	0.0821	0.000137	2.897
600.0	1.046	669.1	1.8908	0.0835	0.000134	2.931

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.10 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001605	-507.2	-1.4963	0.775	0.790	2.109
250.0	0.001632	-486.0	-1.4095	0.714	0.746	2.155
260.0	0.001661	-464.2	-1.3245	0.652	0.701	2.199
263.23	0.001671	-457.1	-1.2973	0.632	0.687	2.213
COEXISTING VAPOR (x=.0253)						
263.23	0.3601	-81.9	0.0850	0.0346	0.000410	1.535
VAPOR						
COEXISTING LIQUID (x=.3081)						
268.41	0.001638	-475.6	-1.2771	0.637	0.676	2.199
268.41	0.3606	-86.0	0.1032	0.0346	0.000403	1.557
270.0	0.3630	-83.5	0.1124	0.0349	0.000400	1.563
280.0	0.3781	-67.7	0.1699	0.0365	0.000382	1.605
290.0	0.3930	-51.4	0.2271	0.0381	0.000366	1.649
300.0	0.4078	-34.7	0.2837	0.0397	0.000352	1.693
310.0	0.4226	-17.5	0.3400	0.0412	0.000339	1.738
320.0	0.4372	0.1	0.3959	0.0427	0.000327	1.783
330.0	0.4518	18.1	0.4515	0.0443	0.000315	1.828
340.0	0.4664	36.7	0.5068	0.0458	0.000305	1.874
350.0	0.4809	55.6	0.5618	0.0473	0.000296	1.920
360.0	0.4953	75.1	0.6165	0.0488	0.000287	1.966
370.0	0.5097	95.0	0.6710	0.0503	0.000278	2.011
380.0	0.5241	115.3	0.7253	0.0517	0.000270	2.057
390.0	0.5384	136.1	0.7793	0.0532	0.000263	2.102
400.0	0.5528	157.3	0.8331	0.0547	0.000256	2.147
410.0	0.5671	179.0	0.8866	0.0561	0.000249	2.191
420.0	0.5813	201.2	0.9400	0.0576	0.000243	2.235
430.0	0.5956	223.7	0.9931	0.0591	0.000237	2.279
440.0	0.6098	246.8	1.0460	0.0605	0.000231	2.322
450.0	0.6240	270.2	1.0986	0.0620	0.000226	2.364
460.0	0.6382	294.0	1.1510	0.0634	0.000221	2.406
470.0	0.6524	318.3	1.2032	0.0648	0.000216	2.448
480.0	0.6666	343.0	1.2552	0.0663	0.000211	2.488
490.0	0.6807	368.1	1.3069	0.0677	0.000207	2.529
500.0	0.6949	393.5	1.3583	0.0691	0.000203	2.568
510.0	0.709	419.4	1.4096	0.0706	0.000198	2.607
520.0	0.723	445.7	1.4605	0.0720	0.000195	2.646
530.0	0.737	472.3	1.5113	0.0734	0.000191	2.683
540.0	0.751	499.3	1.5617	0.0749	0.000187	2.721
550.0	0.766	526.7	1.6120	0.0763	0.000184	2.757
560.0	0.780	554.4	1.6619	0.0777	0.000180	2.793
570.0	0.794	582.5	1.7117	0.0791	0.000177	2.829
580.0	0.808	610.9	1.7612	0.0806	0.000174	2.864
590.0	0.822	639.7	1.8104	0.0820	0.000171	2.898
600.0	0.836	668.9	1.8594	0.0834	0.000168	2.932

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.15 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001605	-507.2	-1.4964	0.777	0.791	2.109
250.0	0.001632	-485.9	-1.4097	0.716	0.747	2.155
260.0	0.001661	-464.2	-1.3246	0.653	0.702	2.198
270.0	0.001692	-442.0	-1.2411	0.591	0.657	2.244
274.24	0.001705	-432.5	-1.2061	0.565	0.638	2.264
COEXISTING VAPOR (x=.0281)						
274.24	0.2464	-67.3	0.0856	0.0349	0.000609	1.601
			VAPOR			
COEXISTING LIQUID (x=.2864)						
279.14	0.001675	-448.6	-1.1863	0.570	0.630	2.253
279.14	0.2464	-71.2	0.1031	0.0349	0.000599	1.622
280.0	0.2473	-69.8	0.1081	0.0350	0.000597	1.625
290.0	0.2577	-53.4	0.1658	0.0368	0.000569	1.665
300.0	0.2679	-36.5	0.2230	0.0385	0.000544	1.707
310.0	0.2781	-19.2	0.2797	0.0401	0.000522	1.750
320.0	0.2881	-1.5	0.3360	0.0417	0.000502	1.793
330.0	0.2981	16.7	0.3919	0.0433	0.000483	1.838
340.0	0.3080	35.3	0.4475	0.0449	0.000467	1.882
350.0	0.3178	54.4	0.5027	0.0465	0.000451	1.927
360.0	0.3276	73.9	0.5577	0.0480	0.000437	1.972
370.0	0.3374	93.8	0.6123	0.0495	0.000423	2.017
380.0	0.3471	114.2	0.6667	0.0511	0.000411	2.062
390.0	0.3568	135.1	0.7209	0.0526	0.000399	2.107
400.0	0.3665	156.4	0.7748	0.0541	0.000388	2.151
410.0	0.3761	178.1	0.8285	0.0556	0.000378	2.195
420.0	0.3858	200.3	0.8819	0.0571	0.000368	2.239
430.0	0.3954	222.9	0.9351	0.0586	0.000359	2.282
440.0	0.4049	246.0	0.9881	0.0600	0.000350	2.325
450.0	0.4145	269.4	1.0408	0.0615	0.000342	2.367
460.0	0.4240	293.3	1.0933	0.0630	0.000334	2.409
470.0	0.4336	317.6	1.1455	0.0644	0.000326	2.450
480.0	0.4431	342.3	1.1975	0.0659	0.000319	2.491
490.0	0.4526	367.4	1.2493	0.0673	0.000312	2.531
500.0	0.4621	392.9	1.3008	0.0688	0.000306	2.571
510.0	0.4716	418.8	1.3521	0.0702	0.000300	2.609
520.0	0.4811	445.1	1.4031	0.0717	0.000293	2.648
530.0	0.4905	471.7	1.4539	0.0731	0.000288	2.685
540.0	0.5000	498.8	1.5044	0.0746	0.000282	2.723
550.0	0.5095	526.1	1.5546	0.0760	0.000277	2.759
560.0	0.5189	553.9	1.6046	0.0775	0.000272	2.795
570.0	0.5283	582.0	1.6544	0.0789	0.000267	2.830
580.0	0.5378	610.5	1.7039	0.0803	0.000262	2.865
590.0	0.5472	639.3	1.7532	0.0818	0.000257	2.899
600.0	0.5566	668.4	1.8022	0.0832	0.000253	2.933

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.20 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001605	-507.2	-1.4966	0.778	0.792	2.108
250.0	0.001632	-485.9	-1.4098	0.717	0.748	2.155
260.0	0.001661	-464.2	-1.3248	0.654	0.703	2.198
270.0	0.001691	-442.0	-1.2413	0.592	0.658	2.243
280.0	0.001725	-419.3	-1.1588	0.530	0.612	2.293
282.69	0.001734	-413.1	-1.1368	0.514	0.600	2.308
COEXISTING VAPOR (x=.0302)						
282.69	0.1879	-56.1	0.0886	0.0350	0.000810	1.656
			VAPOR			
COEXISTING LIQUID (x=.2711)						
287.39	0.001706	-427.6	-1.1173	0.519	0.594	2.297
287.39	0.1878	-59.8	0.1055	0.0349	0.000798	1.676
290.0	0.1899	-55.4	0.1207	0.0354	0.000787	1.685
300.0	0.1979	-38.4	0.1785	0.0372	0.000749	1.723
310.0	0.2057	-20.9	0.2357	0.0390	0.000716	1.764
320.0	0.2135	-3.0	0.2924	0.0407	0.000686	1.805
330.0	0.2212	15.2	0.3487	0.0424	0.000659	1.848
340.0	0.2288	34.0	0.4045	0.0440	0.000635	1.891
350.0	0.2363	53.1	0.4600	0.0456	0.000613	1.935
360.0	0.2438	72.7	0.5152	0.0472	0.000592	1.979
370.0	0.2512	92.7	0.5700	0.0488	0.000573	2.024
380.0	0.2586	113.2	0.6246	0.0504	0.000556	2.068
390.0	0.2660	134.1	0.6789	0.0519	0.000539	2.112
400.0	0.2734	155.4	0.7329	0.0535	0.000524	2.156
410.0	0.2807	177.2	0.7867	0.0550	0.000509	2.200
420.0	0.2880	199.4	0.8403	0.0565	0.000496	2.243
430.0	0.2952	222.1	0.8936	0.0580	0.000483	2.286
440.0	0.3025	245.2	0.9466	0.0595	0.000471	2.329
450.0	0.3097	268.7	0.9994	0.0610	0.000460	2.371
460.0	0.3170	292.6	1.0520	0.0625	0.000449	2.412
470.0	0.3242	316.9	1.1043	0.0640	0.000438	2.453
480.0	0.3313	341.6	1.1563	0.0655	0.000429	2.494
490.0	0.3385	366.8	1.2082	0.0670	0.000419	2.534
500.0	0.3457	392.3	1.2597	0.0684	0.000410	2.573
510.0	0.3529	418.2	1.3110	0.0699	0.000402	2.612
520.0	0.3600	444.5	1.3621	0.0714	0.000394	2.650
530.0	0.3672	471.2	1.4129	0.0728	0.000386	2.687
540.0	0.3743	498.2	1.4634	0.0743	0.000378	2.724
550.0	0.3814	525.6	1.5137	0.0757	0.000371	2.761
560.0	0.3885	553.4	1.5638	0.0772	0.000364	2.797
570.0	0.3957	581.5	1.6136	0.0787	0.000357	2.832
580.0	0.4028	610.0	1.6631	0.0801	0.000351	2.867
590.0	0.4099	638.8	1.7124	0.0815	0.000345	2.901
600.0	0.4170	668.0	1.7614	0.0830	0.000339	2.935

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.25 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001605	-507.1	-1.4967	0.780	0.793	2.108
250.0	0.001632	-485.8	-1.4099	0.718	0.749	2.155
260.0	0.001661	-464.1	-1.3249	0.656	0.704	2.198
270.0	0.001691	-442.0	-1.2414	0.593	0.659	2.243
280.0	0.001724	-419.3	-1.1590	0.532	0.613	2.293
289.66	0.001759	-396.8	-1.0803	0.474	0.569	2.346
COEXISTING VAPOR (x=.0321)						
289.66	0.1521	-46.9	0.0923	0.0349	0.001015	1.704
			VAPOR			
COEXISTING LIQUID (x=.2594)						
294.19	0.001732	-410.0	-1.0612	0.479	0.564	2.336
294.19	0.1519	-50.4	0.1087	0.0348	0.001001	1.723
300.0	0.1558	-40.3	0.1427	0.0359	0.000970	1.743
310.0	0.1623	-22.7	0.2005	0.0378	0.000922	1.780
320.0	0.1687	-4.7	0.2577	0.0396	0.000880	1.819
330.0	0.1750	13.7	0.3143	0.0414	0.000843	1.859
340.0	0.1812	32.5	0.3705	0.0431	0.000810	1.901
350.0	0.1873	51.8	0.4262	0.0448	0.000780	1.944
360.0	0.1935	71.5	0.4816	0.0465	0.000753	1.987
370.0	0.1995	91.5	0.5367	0.0481	0.000728	2.031
380.0	0.2055	112.1	0.5915	0.0497	0.000704	2.074
390.0	0.2115	133.0	0.6459	0.0513	0.000683	2.118
400.0	0.2175	154.4	0.7001	0.0529	0.000663	2.161
410.0	0.2234	176.3	0.7540	0.0544	0.000644	2.204
420.0	0.2293	198.6	0.8076	0.0560	0.000626	2.247
430.0	0.2352	221.2	0.8610	0.0575	0.000610	2.290
440.0	0.2410	244.4	0.9142	0.0591	0.000594	2.332
450.0	0.2469	267.9	0.9670	0.0606	0.000579	2.374
460.0	0.2527	291.8	1.0197	0.0621	0.000565	2.415
470.0	0.2585	316.2	1.0720	0.0636	0.000552	2.456
480.0	0.2643	341.0	1.1242	0.0651	0.000540	2.496
490.0	0.2701	366.1	1.1760	0.0666	0.000528	2.536
500.0	0.2759	391.7	1.2277	0.0681	0.000516	2.575
510.0	0.2816	417.6	1.2790	0.0696	0.000505	2.614
520.0	0.2874	443.9	1.3301	0.0711	0.000495	2.652
530.0	0.2931	470.6	1.3810	0.0725	0.000485	2.689
540.0	0.2989	497.7	1.4315	0.0740	0.000475	2.726
550.0	0.3046	525.1	1.4819	0.0755	0.000466	2.763
560.0	0.3103	552.9	1.5319	0.0769	0.000457	2.798
570.0	0.3160	581.0	1.5818	0.0784	0.000449	2.834
580.0	0.3218	609.5	1.6313	0.0799	0.000441	2.868
590.0	0.3275	638.4	1.6806	0.0813	0.000433	2.902
600.0	0.3332	667.6	1.7297	0.0828	0.000425	2.936

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.30 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001605	-507.1	-1.4968	0.781	0.794	2.108
250.0	0.001632	-485.8	-1.4101	0.720	0.750	2.154
260.0	0.001660	-464.1	-1.3251	0.657	0.705	2.198
270.0	0.001691	-441.9	-1.2416	0.594	0.660	2.243
280.0	0.001724	-419.2	-1.1592	0.533	0.614	2.293
290.0	0.001760	-396.0	-1.0777	0.473	0.569	2.348
295.64	0.001781	-382.6	-1.0321	0.440	0.543	2.382
COEXISTING VAPOR (x=.0337)						
295.64	0.1278	-39.0	0.0964	0.0347	0.001224	1.747
			VAPOR			
COEXISTING LIQUID (x=.2500)						
300.02	0.001755	-394.8	-1.0134	0.445	0.539	2.372
300.02	0.1276	-42.4	0.1123	0.0346	0.001209	1.766
310.0	0.1332	-24.6	0.1707	0.0366	0.001143	1.798
320.0	0.1387	-6.4	0.2285	0.0385	0.001086	1.834
330.0	0.1441	12.2	0.2855	0.0404	0.001037	1.872
340.0	0.1494	31.1	0.3421	0.0422	0.000993	1.912
350.0	0.1547	50.4	0.3981	0.0439	0.000954	1.953
360.0	0.1599	70.2	0.4538	0.0457	0.000919	1.995
370.0	0.1650	90.4	0.5090	0.0473	0.000887	2.038
380.0	0.1701	111.0	0.5640	0.0490	0.000858	2.081
390.0	0.1752	132.0	0.6186	0.0506	0.000830	2.123
400.0	0.1802	153.5	0.6729	0.0523	0.000805	2.166
410.0	0.1852	175.4	0.7270	0.0539	0.000781	2.209
420.0	0.1902	197.7	0.7807	0.0555	0.000759	2.252
430.0	0.1951	220.4	0.8342	0.0570	0.000739	2.294
440.0	0.2000	243.6	0.8874	0.0586	0.000720	2.336
450.0	0.2050	267.1	0.9404	0.0601	0.000701	2.377
460.0	0.2099	291.1	0.9931	0.0617	0.000684	2.418
470.0	0.2147	315.5	1.0455	0.0632	0.000668	2.459
480.0	0.2196	340.3	1.0977	0.0647	0.000652	2.499
490.0	0.2245	365.5	1.1496	0.0662	0.000637	2.539
500.0	0.2293	391.0	1.2013	0.0677	0.000623	2.578
510.0	0.2341	417.0	1.2527	0.0693	0.000610	2.616
520.0	0.2390	443.3	1.3038	0.0707	0.000597	2.654
530.0	0.2438	470.0	1.3547	0.0722	0.000585	2.691
540.0	0.2486	497.1	1.4053	0.0737	0.000573	2.728
550.0	0.2534	524.6	1.4557	0.0752	0.000562	2.764
560.0	0.2582	552.4	1.5058	0.0767	0.000551	2.800
570.0	0.2630	580.5	1.5557	0.0782	0.000541	2.835
580.0	0.2677	609.1	1.6052	0.0796	0.000531	2.870
590.0	0.2725	637.9	1.6546	0.0811	0.000521	2.904
600.0	0.2773	667.1	1.7037	0.0826	0.000512	2.937

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.40 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001604	-507.0	-1.4971	0.784	0.796	2.108
250.0	0.001631	-485.7	-1.4104	0.722	0.752	2.154
260.0	0.001660	-464.0	-1.3254	0.660	0.707	2.197
270.0	0.001690	-441.8	-1.2419	0.597	0.661	2.242
280.0	0.001723	-419.2	-1.1595	0.535	0.616	2.292
290.0	0.001759	-395.9	-1.0781	0.475	0.570	2.347
300.0	0.001798	-372.1	-0.9974	0.417	0.525	2.408
305.64	0.001822	-358.4	-0.9522	0.385	0.500	2.446
COEXISTING VAPOR (x=.0365)						
305.64	0.0969	-25.9	0.1046	0.0341	0.001656	1.825
			VAPOR			
COEXISTING LIQUID (x=.2352)						
309.77	0.001797	-369.0	-0.9342	0.390	0.497	2.436
309.77	0.0966	-29.1	0.1198	0.0339	0.001638	1.843
310.0	0.0967	-28.6	0.1211	0.0340	0.001635	1.844
320.0	0.1012	-10.0	0.1802	0.0362	0.001538	1.870
330.0	0.1055	8.9	0.2383	0.0383	0.001456	1.902
340.0	0.1097	28.1	0.2956	0.0403	0.001386	1.937
350.0	0.1138	47.7	0.3523	0.0422	0.001325	1.974
360.0	0.1179	67.6	0.4086	0.0440	0.001270	2.013
370.0	0.1219	88.0	0.4643	0.0458	0.001222	2.053
380.0	0.1258	108.7	0.5196	0.0476	0.001177	2.094
390.0	0.1297	129.9	0.5746	0.0493	0.001137	2.136
400.0	0.1336	151.4	0.6292	0.0510	0.001100	2.177
410.0	0.1374	173.5	0.6835	0.0527	0.001066	2.219
420.0	0.1413	195.9	0.7375	0.0544	0.001034	2.261
430.0	0.1450	218.7	0.7912	0.0560	0.001005	2.302
440.0	0.1488	241.9	0.8446	0.0576	0.000977	2.343
450.0	0.1526	265.6	0.8977	0.0592	0.000951	2.384
460.0	0.1563	289.6	0.9506	0.0608	0.000927	2.425
470.0	0.1600	314.1	1.0032	0.0624	0.000904	2.465
480.0	0.1637	338.9	1.0555	0.0639	0.000882	2.505
490.0	0.1674	364.2	1.1075	0.0655	0.000861	2.544
500.0	0.1711	389.8	1.1593	0.0671	0.000842	2.583
510.0	0.1748	415.8	1.2108	0.0686	0.000823	2.621
520.0	0.1784	442.2	1.2620	0.0701	0.000805	2.658
530.0	0.1821	468.9	1.3130	0.0716	0.000789	2.696
540.0	0.1857	496.0	1.3637	0.0732	0.000772	2.732
550.0	0.1894	523.5	1.4141	0.0747	0.000757	2.768
560.0	0.1930	551.4	1.4643	0.0762	0.000742	2.804
570.0	0.1966	579.6	1.5142	0.0777	0.000728	2.839
580.0	0.2002	608.1	1.5638	0.0792	0.000714	2.873
590.0	0.2039	637.0	1.6132	0.0807	0.000701	2.907
600.0	0.2075	666.2	1.6623	0.0822	0.000688	2.940

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.50 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001604	-506.9	-1.4974	0.787	0.798	2.107
250.0	0.001631	-485.6	-1.4106	0.725	0.754	2.153
260.0	0.001659	-463.9	-1.3257	0.662	0.709	2.197
270.0	0.001690	-441.8	-1.2422	0.599	0.663	2.242
280.0	0.001723	-419.1	-1.1598	0.538	0.617	2.291
290.0	0.001758	-395.8	-1.0784	0.478	0.572	2.346
300.0	0.001797	-372.0	-0.9978	0.420	0.527	2.407
310.0	0.001840	-347.6	-0.9177	0.364	0.483	2.475
313.91	0.001858	-337.8	-0.8865	0.342	0.466	2.504
COEXISTING VAPOR (x=.0389)						
313.91	0.0779	-15.1	0.1124	0.0334	0.002108	1.897
			VAPOR			
COEXISTING LIQUID (x=.2239)						
317.84	0.001835	-347.3	-0.8692	0.347	0.463	2.494
317.84	0.0776	-18.1	0.1270	0.0332	0.002087	1.913
320.0	0.0785	-14.0	0.1399	0.0337	0.002055	1.917
330.0	0.0822	5.3	0.1993	0.0361	0.001926	1.938
340.0	0.0857	24.9	0.2577	0.0383	0.001819	1.966
350.0	0.0892	44.7	0.3152	0.0404	0.001728	1.999
360.0	0.0926	64.9	0.3721	0.0424	0.001649	2.034
370.0	0.0959	85.5	0.4284	0.0443	0.001579	2.071
380.0	0.0992	106.4	0.4842	0.0462	0.001517	2.110
390.0	0.1024	127.7	0.5395	0.0480	0.001461	2.149
400.0	0.1056	149.4	0.5944	0.0498	0.001410	2.189
410.0	0.1088	171.5	0.6491	0.0515	0.001364	2.230
420.0	0.1119	194.0	0.7033	0.0533	0.001321	2.270
430.0	0.1150	216.9	0.7572	0.0550	0.001281	2.311
440.0	0.1181	240.3	0.8108	0.0566	0.001244	2.351
450.0	0.1211	264.0	0.8641	0.0583	0.001210	2.392
460.0	0.1242	288.1	0.9171	0.0599	0.001177	2.432
470.0	0.1272	312.6	0.9698	0.0616	0.001147	2.471
480.0	0.1302	337.5	1.0222	0.0632	0.001118	2.510
490.0	0.1332	362.8	1.0744	0.0648	0.001091	2.549
500.0	0.1362	388.5	1.1263	0.0664	0.001066	2.588
510.0	0.1391	414.6	1.1779	0.0679	0.001042	2.625
520.0	0.1421	441.0	1.2292	0.0695	0.001018	2.663
530.0	0.1451	467.8	1.2802	0.0711	0.000997	2.700
540.0	0.1480	494.9	1.3310	0.0726	0.000976	2.736
550.0	0.1509	522.5	1.3815	0.0741	0.000956	2.772
560.0	0.1539	550.4	1.4317	0.0757	0.000936	2.807
570.0	0.1568	578.6	1.4817	0.0772	0.000918	2.842
580.0	0.1597	607.2	1.5314	0.0787	0.000900	2.876
590.0	0.1626	636.1	1.5809	0.0803	0.000884	2.910
600.0	0.1656	665.3	1.6300	0.0818	0.000867	2.943

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.60 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001604	-506.8	-1.4976	0.790	0.800	2.107
250.0	0.001631	-485.5	-1.4109	0.728	0.756	2.153
260.0	0.001659	-463.8	-1.3260	0.665	0.710	2.196
270.0	0.001690	-441.7	-1.2425	0.602	0.665	2.241
280.0	0.001722	-419.0	-1.1602	0.540	0.619	2.290
290.0	0.001758	-395.8	-1.0788	0.480	0.574	2.345
300.0	0.001796	-372.0	-0.9982	0.422	0.529	2.406
310.0	0.001839	-347.5	-0.9182	0.366	0.484	2.474
320.0	0.001886	-322.4	-0.8384	0.312	0.441	2.550
321.03	0.001892	-319.7	-0.8302	0.307	0.436	2.558
COEXISTING VAPOR (x=.0410)						
321.03	0.0650	-6.0	0.1197	0.0325	0.002580	1.963
			VAPOR			
COEXISTING LIQUID (x=.2148)						
324.79	0.001870	-328.3	-0.8135	0.311	0.434	2.549
324.79	0.0648	-8.9	0.1337	0.0324	0.002557	1.979
330.0	0.0665	1.5	0.1654	0.0337	0.002460	1.984
340.0	0.0697	21.5	0.2249	0.0362	0.002301	2.002
350.0	0.0727	41.6	0.2834	0.0385	0.002170	2.027
360.0	0.0757	62.1	0.3410	0.0406	0.002059	2.058
370.0	0.0786	82.9	0.3979	0.0427	0.001963	2.091
380.0	0.0814	104.0	0.4542	0.0447	0.001879	2.127
390.0	0.0842	125.4	0.5100	0.0466	0.001804	2.164
400.0	0.0869	147.3	0.5653	0.0485	0.001737	2.202
410.0	0.0896	169.5	0.6201	0.0503	0.001676	2.241
420.0	0.0923	192.1	0.6746	0.0521	0.001620	2.281
430.0	0.0949	215.2	0.7288	0.0539	0.001569	2.320
440.0	0.0975	238.6	0.7826	0.0556	0.001521	2.360
450.0	0.1001	262.4	0.8361	0.0574	0.001477	2.399
460.0	0.1027	286.6	0.8892	0.0591	0.001436	2.439
470.0	0.1053	311.2	0.9421	0.0607	0.001398	2.478
480.0	0.1078	336.1	0.9947	0.0624	0.001362	2.516
490.0	0.1103	361.5	1.0469	0.0640	0.001328	2.555
500.0	0.1129	387.2	1.0989	0.0656	0.001296	2.593
510.0	0.1154	413.3	1.1506	0.0673	0.001265	2.630
520.0	0.1179	439.8	1.2021	0.0689	0.001236	2.667
530.0	0.1204	466.6	1.2532	0.0705	0.001209	2.704
540.0	0.1229	493.9	1.3040	0.0720	0.001183	2.740
550.0	0.1253	521.4	1.3546	0.0736	0.001158	2.776
560.0	0.1278	549.3	1.4049	0.0752	0.001134	2.811
570.0	0.1303	577.6	1.4549	0.0767	0.001112	2.845
580.0	0.1327	606.2	1.5047	0.0783	0.001090	2.879
590.0	0.1352	635.2	1.5542	0.0798	0.001069	2.913
600.0	0.1376	664.4	1.6034	0.0814	0.001049	2.946

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.70 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001603	-506.7	-1.4979	0.792	0.802	2.107
250.0	0.001630	-485.4	-1.4112	0.730	0.758	2.153
260.0	0.001659	-463.7	-1.3262	0.667	0.712	2.196
270.0	0.001689	-441.6	-1.2429	0.604	0.666	2.240
280.0	0.001722	-418.9	-1.1605	0.543	0.621	2.289
290.0	0.001757	-395.7	-1.0792	0.482	0.575	2.344
300.0	0.001796	-371.9	-0.9986	0.424	0.530	2.405
310.0	0.001838	-347.5	-0.9186	0.368	0.486	2.472
320.0	0.001885	-322.3	-0.8389	0.315	0.442	2.548
327.31	0.001924	-303.5	-0.7805	0.277	0.411	2.610
COEXISTING VAPOR (x=.0430)						
327.31	0.0557	1.9	0.1266	0.0317	0.003074	2.027
			VAPOR			
COEXISTING LIQUID (x=.2072)						
330.92	0.001903	-311.2	-0.7645	0.281	0.409	2.600
330.92	0.0555	-0.8	0.1400	0.0315	0.003049	2.042
340.0	0.0581	17.8	0.1955	0.0340	0.002842	2.046
350.0	0.0609	38.4	0.2551	0.0365	0.002658	2.062
360.0	0.0636	59.1	0.3136	0.0388	0.002505	2.085
370.0	0.0662	80.2	0.3711	0.0411	0.002376	2.114
380.0	0.0687	101.5	0.4280	0.0432	0.002265	2.146
390.0	0.0711	123.1	0.4842	0.0452	0.002168	2.180
400.0	0.0736	145.1	0.5399	0.0472	0.002081	2.216
410.0	0.0759	167.5	0.5951	0.0491	0.002003	2.254
420.0	0.0783	190.2	0.6499	0.0510	0.001932	2.292
430.0	0.0806	213.4	0.7043	0.0529	0.001868	2.330
440.0	0.0829	236.9	0.7583	0.0547	0.001809	2.369
450.0	0.0851	260.8	0.8120	0.0564	0.001754	2.407
460.0	0.0874	285.0	0.8653	0.0582	0.001703	2.446
470.0	0.0896	309.7	0.9183	0.0599	0.001656	2.484
480.0	0.0918	334.7	0.9710	0.0616	0.001612	2.523
490.0	0.0940	360.1	1.0234	0.0633	0.001570	2.561
500.0	0.0962	385.9	1.0755	0.0649	0.001531	2.598
510.0	0.0984	412.1	1.1273	0.0666	0.001494	2.635
520.0	0.1006	438.6	1.1788	0.0682	0.001459	2.672
530.0	0.1028	465.5	1.2301	0.0699	0.001426	2.708
540.0	0.1049	492.8	1.2810	0.0715	0.001394	2.744
550.0	0.1070	520.4	1.3316	0.0731	0.001365	2.779
560.0	0.1092	548.3	1.3820	0.0747	0.001336	2.814
570.0	0.1113	576.6	1.4321	0.0763	0.001309	2.849
580.0	0.1134	605.3	1.4819	0.0778	0.001283	2.883
590.0	0.1156	634.2	1.5315	0.0794	0.001258	2.916
600.0	0.1177	663.6	1.5807	0.0810	0.001234	2.949

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.80 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001603	-506.6	-1.4981	0.795	0.804	2.106
250.0	0.001630	-485.3	-1.4115	0.733	0.760	2.152
260.0	0.001658	-463.6	-1.3265	0.670	0.714	2.195
270.0	0.001689	-441.5	-1.2432	0.607	0.668	2.240
280.0	0.001721	-418.8	-1.1609	0.545	0.622	2.289
290.0	0.001756	-395.6	-1.0795	0.485	0.577	2.343
300.0	0.001795	-371.9	-0.9990	0.426	0.532	2.404
310.0	0.001837	-347.4	-0.9191	0.371	0.487	2.471
320.0	0.001884	-322.3	-0.8394	0.317	0.444	2.546
330.0	0.001937	-296.4	-0.7596	0.266	0.401	2.632
332.97	0.001954	-288.5	-0.7359	0.251	0.388	2.660
COEXISTING VAPOR (x=.0447)						
332.97	0.04861	8.9	0.1329	0.0307	0.00359	2.089
			VAPOR			
COEXISTING LIQUID (x=.2007)						
336.44	0.001934	-295.7	-0.7205	0.255	0.387	2.649
336.44	0.04838	6.3	0.1459	0.0305	0.00356	2.103
340.0	0.04940	13.9	0.1681	0.0316	0.00346	2.100
350.0	0.05201	34.9	0.2291	0.0344	0.00320	2.102
360.0	0.05448	56.0	0.2886	0.0370	0.00299	2.117
370.0	0.05685	77.4	0.3470	0.0394	0.00282	2.139
380.0	0.05913	98.9	0.4045	0.0417	0.00268	2.167
390.0	0.06136	120.8	0.4612	0.0438	0.00255	2.198
400.0	0.06353	142.9	0.5173	0.0459	0.00244	2.232
410.0	0.06568	165.4	0.5729	0.0479	0.002346	2.267
420.0	0.06778	188.3	0.6280	0.0499	0.002259	2.303
430.0	0.06985	211.5	0.6826	0.0518	0.002180	2.340
440.0	0.07189	235.1	0.7369	0.0537	0.002107	2.378
450.0	0.07391	259.1	0.7907	0.0555	0.002041	2.416
460.0	0.07591	283.5	0.8442	0.0573	0.001979	2.453
470.0	0.07790	308.2	0.8974	0.0591	0.001922	2.491
480.0	0.07987	333.3	0.9503	0.0608	0.001869	2.529
490.0	0.08182	358.8	1.0028	0.0625	0.001819	2.566
500.0	0.08376	384.6	1.0550	0.0642	0.001773	2.604
510.0	0.0857	410.8	1.1069	0.0659	0.001729	2.640
520.0	0.0876	437.4	1.1585	0.0676	0.001687	2.677
530.0	0.0895	464.3	1.2098	0.0693	0.001648	2.713
540.0	0.0914	491.6	1.2608	0.0709	0.001611	2.748
550.0	0.0933	519.3	1.3115	0.0725	0.001575	2.783
560.0	0.0952	547.3	1.3620	0.0742	0.001541	2.818
570.0	0.0971	575.6	1.4121	0.0758	0.001509	2.852
580.0	0.0990	604.3	1.4620	0.0774	0.001479	2.886
590.0	0.1008	633.3	1.5116	0.0790	0.001449	2.919
600.0	0.1027	662.7	1.5610	0.0806	0.001421	2.952

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 0.90 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001603	-506.5	-1.4984	0.798	0.806	2.106
250.0	0.001629	-485.2	-1.4117	0.736	0.761	2.152
260.0	0.001658	-463.5	-1.3268	0.672	0.716	2.195
270.0	0.001688	-441.4	-1.2435	0.609	0.670	2.239
280.0	0.001721	-418.8	-1.1612	0.547	0.624	2.288
290.0	0.001756	-395.6	-1.0799	0.487	0.578	2.342
300.0	0.001794	-371.8	-0.9994	0.429	0.533	2.402
310.0	0.001836	-347.4	-0.9195	0.373	0.489	2.469
320.0	0.001883	-322.3	-0.8399	0.319	0.445	2.544
330.0	0.001936	-296.4	-0.7602	0.268	0.402	2.629
338.12	0.001984	-274.7	-0.6953	0.228	0.368	2.708
COEXISTING VAPOR (x=.0464)						
338.12	0.04305	15.2	0.1387	0.0298	0.00413	2.150
			VAPOR			
COEXISTING LIQUID (x=.1950)						
341.47	0.001965	-281.3	-0.6803	0.232	0.367	2.697
341.47	0.04286	12.7	0.1513	0.0296	0.00410	2.164
350.0	0.04498	31.2	0.2047	0.0322	0.00380	2.151
360.0	0.04731	52.8	0.2654	0.0351	0.00353	2.154
370.0	0.04953	74.4	0.3247	0.0377	0.00331	2.169
380.0	0.05165	96.2	0.3829	0.0401	0.00312	2.191
390.0	0.05371	118.3	0.4402	0.0424	0.00296	2.218
400.0	0.05571	140.7	0.4968	0.0446	0.00283	2.248
410.0	0.05766	163.3	0.5527	0.0467	0.00271	2.281
420.0	0.05958	186.3	0.6081	0.0487	0.00260	2.316
430.0	0.06146	209.7	0.6631	0.0507	0.00250	2.351
440.0	0.06332	233.4	0.7175	0.0527	0.00242	2.388
450.0	0.06515	257.5	0.7716	0.0546	0.00234	2.424
460.0	0.06696	281.9	0.8253	0.0564	0.00226	2.461
470.0	0.06876	306.7	0.8787	0.0582	0.00220	2.498
480.0	0.07054	331.9	0.9316	0.0600	0.00213	2.536
490.0	0.07230	357.4	0.9843	0.0618	0.00208	2.572
500.0	0.07405	383.3	1.0366	0.0635	0.00202	2.609
510.0	0.0758	409.6	1.0886	0.0653	0.001969	2.645
520.0	0.0775	436.2	1.1403	0.0670	0.001920	2.682
530.0	0.0792	463.2	1.1917	0.0687	0.001874	2.717
540.0	0.0809	490.5	1.2428	0.0703	0.001831	2.752
550.0	0.0826	518.2	1.2936	0.0720	0.001790	2.787
560.0	0.0843	546.2	1.3441	0.0737	0.001751	2.822
570.0	0.0860	574.6	1.3944	0.0753	0.001713	2.856
580.0	0.0877	603.3	1.4443	0.0769	0.001678	2.889
590.0	0.0894	632.4	1.4940	0.0785	0.001644	2.922
600.0	0.0911	661.8	1.5434	0.0802	0.001611	2.955

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=1.0 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001602	-506.4	-1.4987	0.801	0.808	2.106
250.0	0.001629	-485.1	-1.4120	0.738	0.763	2.151
260.0	0.001657	-463.4	-1.3271	0.675	0.717	2.194
270.0	0.001688	-441.3	-1.2438	0.612	0.671	2.239
280.0	0.001720	-418.7	-1.1615	0.550	0.625	2.287
290.0	0.001755	-395.5	-1.0803	0.489	0.580	2.341
300.0	0.001793	-371.7	-0.9998	0.431	0.535	2.401
310.0	0.001835	-347.4	-0.9199	0.375	0.491	2.468
320.0	0.001882	-322.3	-0.8403	0.322	0.447	2.542
330.0	0.001934	-296.4	-0.7608	0.271	0.404	2.627
340.0	0.001995	-269.6	-0.6808	0.222	0.361	2.725
342.87	0.002014	-261.7	-0.6577	0.208	0.349	2.757
COEXISTING VAPOR (x=.0480)						
342.87	0.03855	20.9	0.1441	0.0288	0.00469	2.212
			VAPOR			
COEXISTING LIQUID (x=.1899)						
346.11	0.001995	-267.8	-0.6433	0.211	0.348	2.745
346.11	0.03837	18.5	0.1563	0.0286	0.00466	2.225
350.0	0.03930	27.2	0.1812	0.0299	0.00449	2.212
360.0	0.04154	49.3	0.2434	0.0331	0.00412	2.198
370.0	0.04365	71.3	0.3038	0.0359	0.00383	2.202
380.0	0.04565	93.5	0.3628	0.0385	0.00360	2.217
390.0	0.04758	115.8	0.4207	0.0409	0.00340	2.240
400.0	0.04944	138.3	0.4778	0.0432	0.00323	2.266
410.0	0.05125	161.2	0.5342	0.0455	0.00309	2.297
420.0	0.05302	184.3	0.5900	0.0476	0.00296	2.329
430.0	0.05476	207.8	0.6452	0.0497	0.00284	2.363
440.0	0.05647	231.6	0.6999	0.0517	0.00274	2.398
450.0	0.05815	255.8	0.7542	0.0536	0.00264	2.433
460.0	0.05981	280.3	0.8081	0.0555	0.00256	2.470
470.0	0.06145	305.2	0.8616	0.0574	0.00248	2.506
480.0	0.06307	330.4	0.9148	0.0592	0.00241	2.542
490.0	0.06468	356.0	0.9675	0.0611	0.00234	2.579
500.0	0.06628	382.0	1.0200	0.0628	0.00227	2.615
510.0	0.06787	408.3	1.0721	0.0646	0.00221	2.651
520.0	0.06944	435.0	1.1239	0.0663	0.00216	2.686
530.0	0.07101	462.0	1.1754	0.0681	0.00211	2.722
540.0	0.07256	489.4	1.2266	0.0698	0.00206	2.757
550.0	0.07411	517.1	1.2774	0.0715	0.00201	2.791
560.0	0.07565	545.2	1.3280	0.0732	0.00196	2.826
570.0	0.07718	573.6	1.3783	0.0748	0.00192	2.859
580.0	0.07871	602.4	1.4283	0.0765	0.00188	2.893
590.0	0.08024	631.5	1.4780	0.0781	0.00184	2.925
600.0	0.08175	660.9	1.5275	0.0798	0.00180	2.958

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=1.2 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001602	-506.2	-1.4992	0.806	0.813	2.105
250.0	0.001628	-484.9	-1.4126	0.744	0.767	2.151
260.0	0.001657	-463.3	-1.3277	0.680	0.721	2.193
270.0	0.001687	-441.2	-1.2444	0.617	0.675	2.237
280.0	0.001719	-418.5	-1.1622	0.554	0.629	2.286
290.0	0.001754	-395.4	-1.0810	0.494	0.583	2.340
300.0	0.001792	-371.6	-1.0006	0.436	0.538	2.399
310.0	0.001833	-347.3	-0.9208	0.380	0.494	2.465
320.0	0.001880	-322.2	-0.8413	0.326	0.450	2.539
330.0	0.001932	-296.4	-0.7619	0.275	0.407	2.622
340.0	0.001991	-269.6	-0.6821	0.226	0.365	2.718
350.0	0.002061	-241.8	-0.6016	0.1798	0.323	2.834
351.42	0.002072	-237.8	-0.5901	0.1735	0.317	2.853
COEXISTING VAPOR (x=.0509)						
351.42	0.03171	30.8	0.1537	0.0269	0.00590	2.336
			VAPOR			
COEXISTING LIQUID (x=.1812)						
354.45	0.002054	-243.1	-0.5766	0.1759	0.316	2.840
354.45	0.03155	28.6	0.1653	0.0267	0.00587	2.348
360.0	0.03274	41.6	0.2016	0.0287	0.00553	2.316
370.0	0.03473	64.7	0.2647	0.0321	0.00504	2.287
380.0	0.03658	87.6	0.3257	0.0351	0.00467	2.282
390.0	0.03833	110.5	0.3852	0.0379	0.00437	2.291
400.0	0.03999	133.5	0.4435	0.0405	0.00412	2.308
410.0	0.04160	156.7	0.5008	0.0429	0.00391	2.331
420.0	0.04316	180.2	0.5573	0.0452	0.00372	2.358
430.0	0.04468	203.9	0.6132	0.0475	0.00356	2.388
440.0	0.04617	228.0	0.6685	0.0496	0.00342	2.420
450.0	0.04763	252.4	0.7233	0.0517	0.00329	2.453
460.0	0.04906	277.1	0.7775	0.0537	0.00318	2.487
470.0	0.05048	302.1	0.8314	0.0557	0.00307	2.522
480.0	0.05188	327.5	0.8849	0.0577	0.00297	2.557
490.0	0.05326	353.3	0.9379	0.0596	0.00288	2.592
500.0	0.05463	379.4	0.9906	0.0614	0.00280	2.627
510.0	0.05598	405.8	1.0430	0.0633	0.00272	2.662
520.0	0.05733	432.6	1.0950	0.0651	0.00265	2.697
530.0	0.05866	459.7	1.1466	0.0669	0.00258	2.731
540.0	0.05998	487.2	1.1980	0.0687	0.00252	2.766
550.0	0.06130	515.0	1.2490	0.0704	0.00246	2.800
560.0	0.06261	543.1	1.2998	0.0722	0.00240	2.833
570.0	0.06391	571.6	1.3502	0.0739	0.00235	2.867
580.0	0.06521	600.4	1.4003	0.0756	0.00230	2.899
590.0	0.06650	629.6	1.4502	0.0773	0.00225	2.932
600.0	0.06779	659.1	1.4997	0.0790	0.00220	2.964

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=1.4 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001601	-506.0	-1.4997	0.812	0.817	2.104
250.0	0.001628	-484.7	-1.4131	0.749	0.771	2.150
260.0	0.001656	-463.1	-1.3283	0.685	0.724	2.192
270.0	0.001686	-441.0	-1.2450	0.621	0.678	2.236
280.0	0.001718	-418.4	-1.1629	0.559	0.632	2.284
290.0	0.001753	-395.2	-1.0817	0.499	0.586	2.338
300.0	0.001790	-371.5	-1.0014	0.440	0.541	2.397
310.0	0.001832	-347.2	-0.9217	0.384	0.497	2.462
320.0	0.001877	-322.1	-0.8423	0.331	0.453	2.535
330.0	0.001929	-296.3	-0.7630	0.280	0.410	2.617
340.0	0.001988	-269.7	-0.6834	0.231	0.368	2.711
350.0	0.002056	-242.0	-0.6032	0.1851	0.326	2.824
358.98	0.002130	-216.0	-0.5300	0.1451	0.289	2.953
COEXISTING VAPOR (x=.0537)						
358.98	0.02674	39.1	0.1618	0.0249	0.00722	2.467
			VAPOR			
COEXISTING LIQUID (x=.1739)						
361.83	0.002113	-220.6	-0.5173	0.1473	0.288	2.938
361.83	0.02661	37.1	0.1728	0.0247	0.00718	2.478
370.0	0.02821	57.1	0.2274	0.0280	0.00653	2.408
380.0	0.03000	81.0	0.2912	0.0315	0.00594	2.368
390.0	0.03165	104.7	0.3526	0.0347	0.00548	2.355
400.0	0.03319	128.3	0.4123	0.0376	0.00512	2.359
410.0	0.03467	152.0	0.4708	0.0403	0.00482	2.372
420.0	0.03609	175.8	0.5282	0.0428	0.00457	2.392
430.0	0.03746	199.9	0.5848	0.0453	0.00435	2.417
440.0	0.03880	224.2	0.6407	0.0476	0.00416	2.445
450.0	0.04010	248.8	0.6960	0.0498	0.00399	2.475
460.0	0.04138	273.8	0.7508	0.0519	0.00384	2.506
470.0	0.04264	299.0	0.8050	0.0540	0.00370	2.539
480.0	0.04387	324.5	0.8588	0.0561	0.00357	2.572
490.0	0.04509	350.4	0.9122	0.0581	0.00346	2.605
500.0	0.04630	376.7	0.9652	0.0600	0.00335	2.639
510.0	0.04749	403.2	1.0177	0.0620	0.00326	2.673
520.0	0.04867	430.1	1.0699	0.0638	0.00316	2.707
530.0	0.04984	457.3	1.1218	0.0657	0.00308	2.741
540.0	0.05100	484.9	1.1733	0.0675	0.00300	2.775
550.0	0.05215	512.8	1.2245	0.0694	0.00292	2.808
560.0	0.05330	541.0	1.2754	0.0712	0.00285	2.841
570.0	0.05443	569.6	1.3260	0.0729	0.00279	2.874
580.0	0.05557	598.5	1.3762	0.0747	0.00272	2.906
590.0	0.05669	627.7	1.4262	0.0764	0.00266	2.938
600.0	0.05781	657.3	1.4759	0.0782	0.00261	2.970

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=1.6 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001600	-505.8	-1.5002	0.818	0.821	2.104
250.0	0.001627	-484.5	-1.4137	0.754	0.775	2.149
260.0	0.001655	-462.9	-1.3289	0.690	0.728	2.191
270.0	0.001685	-440.8	-1.2457	0.626	0.681	2.235
280.0	0.001717	-418.2	-1.1636	0.564	0.635	2.283
290.0	0.001751	-395.1	-1.0825	0.503	0.589	2.336
300.0	0.001789	-371.4	-1.0022	0.445	0.544	2.395
310.0	0.001830	-347.1	-0.9226	0.389	0.500	2.460
320.0	0.001875	-322.1	-0.8433	0.335	0.456	2.532
330.0	0.001926	-296.3	-0.7641	0.284	0.414	2.612
340.0	0.001984	-269.7	-0.6847	0.236	0.372	2.705
350.0	0.002052	-242.1	-0.6046	0.190	0.330	2.814
360.0	0.002133	-213.2	-0.5234	0.146	0.288	2.954
365.78	0.002190	-195.78	-0.4754	0.121	0.264	3.060
COEXISTING VAPOR (x=.0562)						
365.78	0.02295	46.1	0.1686	0.0228	0.00866	2.609
VAPOR						
COEXISTING LIQUID (x=.1675)						
368.47	0.002173	-199.8	-0.4635	0.123	0.264	3.043
368.47	0.02284	44.4	0.1790	0.0227	0.00862	2.619
370.0	0.02314	48.4	0.1899	0.0234	0.00844	2.593
380.0	0.02495	73.8	0.2576	0.0277	0.00748	2.486
390.0	0.02656	98.4	0.3216	0.0313	0.00679	2.439
400.0	0.02804	122.7	0.3832	0.0346	0.00627	2.421
410.0	0.02943	147.0	0.4430	0.0376	0.00585	2.421
420.0	0.03075	171.3	0.5015	0.0404	0.00550	2.432
430.0	0.03202	195.7	0.5590	0.0430	0.00521	2.450
440.0	0.03325	220.4	0.6156	0.0455	0.00496	2.472
450.0	0.03444	245.2	0.6715	0.0478	0.00474	2.498
460.0	0.03561	270.4	0.7267	0.0501	0.00454	2.527
470.0	0.03674	295.8	0.7814	0.0523	0.00437	2.557
480.0	0.03786	321.5	0.8355	0.0545	0.00421	2.588
490.0	0.03896	347.6	0.8892	0.0566	0.00407	2.620
500.0	0.04005	373.9	0.9425	0.0586	0.00393	2.653
510.0	0.04112	400.6	0.9953	0.0606	0.00381	2.685
520.0	0.04218	427.6	1.0477	0.0626	0.00370	2.718
530.0	0.04322	454.9	1.0998	0.0645	0.00360	2.751
540.0	0.04426	482.6	1.1515	0.0664	0.00350	2.784
550.0	0.04529	510.6	1.2029	0.0683	0.00341	2.817
560.0	0.04631	538.9	1.2539	0.0702	0.00332	2.849
570.0	0.04732	567.6	1.3046	0.0720	0.00324	2.882
580.0	0.04833	596.5	1.3550	0.0738	0.00317	2.914
590.0	0.04933	625.8	1.4051	0.0756	0.00309	2.945
600.0	0.05033	655.5	1.4549	0.0774	0.00302	2.976

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=1.8 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001600	-505.6	-1.5007	0.823	0.825	2.103
250.0	0.001626	-484.4	-1.4142	0.759	0.778	2.148
260.0	0.001654	-462.7	-1.3295	0.695	0.731	2.190
270.0	0.001684	-440.7	-1.2463	0.631	0.684	2.234
280.0	0.001716	-418.1	-1.1642	0.569	0.638	2.282
290.0	0.001750	-394.9	-1.0832	0.508	0.592	2.334
300.0	0.001787	-371.3	-1.0030	0.449	0.547	2.393
310.0	0.001828	-347.0	-0.9234	0.393	0.503	2.457
320.0	0.001873	-322.0	-0.8442	0.340	0.459	2.528
330.0	0.001924	-296.3	-0.7652	0.289	0.417	2.608
340.0	0.001981	-269.7	-0.6859	0.240	0.375	2.698
350.0	0.002047	-242.2	-0.6061	0.194	0.333	2.805
360.0	0.002127	-213.4	-0.5252	0.150	0.292	2.940
370.0	0.002227	-183.1	-0.4421	0.108	0.250	3.128
372.00	0.002251	-176.8	-0.4251	0.100	0.241	3.178
COEXISTING VAPOR (x=.0587)						
372.00	0.01995	52.1	0.1741	0.0208	0.01024	2.768
			VAPOR			
COEXISTING LIQUID (x=.1618)						
374.53	0.002235	-180.4	-0.4139	0.102	0.241	3.158
374.53	0.01986	50.5	0.1840	0.0207	0.01020	2.776
380.0	0.02087	65.4	0.2235	0.0234	0.00941	2.663
390.0	0.02251	91.5	0.2912	0.0277	0.00835	2.551
400.0	0.02397	116.7	0.3552	0.0315	0.00759	2.501
410.0	0.02532	141.7	0.4167	0.0348	0.00700	2.481
420.0	0.02658	166.5	0.4765	0.0379	0.00654	2.478
430.0	0.02777	191.4	0.5350	0.0407	0.00615	2.487
440.0	0.02892	216.3	0.5924	0.0434	0.00582	2.504
450.0	0.03003	241.5	0.6489	0.0459	0.00554	2.525
460.0	0.03111	266.9	0.7047	0.0483	0.00529	2.549
470.0	0.03216	292.5	0.7598	0.0506	0.00508	2.577
480.0	0.03318	318.4	0.8143	0.0529	0.00488	2.605
490.0	0.03419	344.6	0.8684	0.0551	0.00471	2.636
500.0	0.03518	371.2	0.9219	0.0572	0.00454	2.667
510.0	0.03616	398.0	0.9750	0.0593	0.00440	2.698
520.0	0.03712	425.1	1.0277	0.0614	0.00426	2.730
530.0	0.03808	452.5	1.0800	0.0634	0.00414	2.762
540.0	0.03902	480.3	1.1319	0.0653	0.00402	2.794
550.0	0.03995	508.4	1.1834	0.0673	0.00391	2.826
560.0	0.04088	536.8	1.2346	0.0692	0.00381	2.858
570.0	0.04180	565.5	1.2855	0.0711	0.00371	2.889
580.0	0.04271	594.6	1.3360	0.0729	0.00362	2.921
590.0	0.04361	624.0	1.3862	0.0748	0.00354	2.952
600.0	0.04451	653.7	1.4361	0.0766	0.00346	2.983

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=2.0 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001599	-505.4	-1.5013	0.829	0.829	2.102
250.0	0.001625	-484.2	-1.4148	0.765	0.782	2.147
260.0	0.001653	-462.5	-1.3300	0.700	0.735	2.189
270.0	0.001683	-440.5	-1.2469	0.636	0.688	2.233
280.0	0.001715	-417.9	-1.1649	0.573	0.641	2.280
290.0	0.001749	-394.8	-1.0839	0.512	0.595	2.333
300.0	0.001786	-371.1	-1.0038	0.454	0.550	2.391
310.0	0.001826	-346.9	-0.9243	0.398	0.506	2.455
320.0	0.001871	-321.9	-0.8452	0.344	0.462	2.525
330.0	0.001921	-296.2	-0.7662	0.293	0.420	2.603
340.0	0.001978	-269.7	-0.6871	0.245	0.378	2.692
350.0	0.002043	-242.3	-0.6075	0.1990	0.337	2.796
360.0	0.002121	-213.6	-0.5269	0.1553	0.296	2.926
370.0	0.002218	-183.5	-0.4444	0.1136	0.254	3.103
377.73	0.002316	-158.73	-0.3781	0.0824	0.221	3.313
COEXISTING VAPOR (x=.0611)						
377.73	0.01751	57.1	0.1783	0.0188	0.01198	2.951
			VAPOR			
COEXISTING LIQUID (x=.1567)						
380.11	0.002301	-161.9	-0.3676	0.0841	0.221	3.290
380.11	0.01743	55.6	0.1878	0.0186	0.01193	2.958
390.0	0.01917	83.6	0.2603	0.0238	0.01026	2.713
400.0	0.02065	110.2	0.3276	0.0282	0.00914	2.604
410.0	0.02198	136.0	0.3913	0.0319	0.00833	2.554
420.0	0.02320	161.4	0.4526	0.0353	0.00770	2.534
430.0	0.02435	186.8	0.5122	0.0383	0.00719	2.531
440.0	0.02544	212.2	0.5705	0.0412	0.00677	2.539
450.0	0.02649	237.6	0.6278	0.0439	0.00641	2.554
460.0	0.02750	263.3	0.6842	0.0465	0.00610	2.574
470.0	0.02848	289.2	0.7398	0.0489	0.00583	2.598
480.0	0.02943	315.3	0.7948	0.0513	0.00559	2.624
490.0	0.03037	341.7	0.8492	0.0536	0.00538	2.652
500.0	0.03129	368.3	0.9030	0.0558	0.00519	2.681
510.0	0.03219	395.3	0.9564	0.0580	0.00501	2.711
520.0	0.03308	422.5	1.0093	0.0601	0.00485	2.742
530.0	0.03396	450.1	1.0618	0.0622	0.00470	2.773
540.0	0.03482	478.0	1.1139	0.0642	0.00456	2.804
550.0	0.03568	506.2	1.1656	0.0663	0.00443	2.835
560.0	0.03653	534.7	1.2170	0.0682	0.00431	2.866
570.0	0.03737	563.5	1.2680	0.0702	0.00420	2.897
580.0	0.03821	592.6	1.3187	0.0721	0.00409	2.928
590.0	0.03903	622.1	1.3690	0.0740	0.00399	2.959
600.0	0.03986	651.8	1.4190	0.0759	0.00390	2.989

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=2.2 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001598	-505.2	-1.5018	0.834	0.833	2.102
250.0	0.001625	-484.0	-1.4153	0.770	0.786	2.147
260.0	0.001652	-462.4	-1.3306	0.705	0.738	2.188
270.0	0.001682	-440.3	-1.2475	0.641	0.691	2.232
280.0	0.001714	-417.7	-1.1655	0.578	0.644	2.279
290.0	0.001748	-394.7	-1.0846	0.517	0.598	2.331
300.0	0.001784	-371.0	-1.0045	0.458	0.553	2.389
310.0	0.001825	-346.8	-0.9251	0.402	0.509	2.452
320.0	0.001869	-321.9	-0.8461	0.349	0.465	2.522
330.0	0.001918	-296.2	-0.7673	0.298	0.423	2.599
340.0	0.001974	-269.7	-0.6883	0.250	0.381	2.686
350.0	0.002039	-242.3	-0.6089	0.204	0.340	2.788
360.0	0.002115	-213.8	-0.5286	0.1601	0.300	2.913
370.0	0.002210	-183.8	-0.4465	0.1187	0.259	3.081
380.0	0.002336	-151.8	-0.3610	0.0789	0.216	3.347
383.05	0.002385	-141.3	-0.3337	0.0669	0.202	3.472
COEXISTING VAPOR (x=.0634)						
383.05	0.01548	61.05	0.1812	0.0167	0.01391	3.169
			VAPOR			
COEXISTING LIQUID (x=.1519)						
385.29	0.002370	-144.1	-0.3239	0.0685	0.202	3.445
385.29	0.01541	59.9	0.1902	0.0166	0.01386	3.175
390.0	0.01629	74.3	0.2275	0.0195	0.01271	2.968
400.0	0.01786	102.8	0.2996	0.0246	0.01101	2.747
410.0	0.01920	129.8	0.3661	0.0288	0.00985	2.648
420.0	0.02041	156.0	0.4294	0.0326	0.00900	2.601
430.0	0.02153	182.0	0.4904	0.0359	0.00834	2.582
440.0	0.02258	207.8	0.5497	0.0390	0.00780	2.579
450.0	0.02357	233.6	0.6078	0.0419	0.00735	2.587
460.0	0.02453	259.6	0.6648	0.0446	0.00697	2.602
470.0	0.02546	285.7	0.7210	0.0472	0.00664	2.621
480.0	0.02636	312.1	0.7765	0.0497	0.00635	2.644
490.0	0.02724	338.6	0.8312	0.0521	0.00609	2.670
500.0	0.02810	365.5	0.8855	0.0544	0.00586	2.697
510.0	0.02894	392.6	0.9391	0.0567	0.00565	2.725
520.0	0.02977	420.0	0.9923	0.0589	0.00546	2.755
530.0	0.03059	447.7	1.0450	0.0611	0.00528	2.784
540.0	0.03139	475.6	1.0973	0.0632	0.00512	2.814
550.0	0.03219	503.9	1.1492	0.0652	0.00497	2.845
560.0	0.03297	532.5	1.2008	0.0673	0.00483	2.875
570.0	0.03375	561.4	1.2519	0.0693	0.00470	2.906
580.0	0.03453	590.6	1.3027	0.0712	0.00458	2.936
590.0	0.03529	620.2	1.3532	0.0732	0.00446	2.966
600.0	0.03605	650.0	1.4033	0.0751	0.00435	2.996

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=2.4 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001598	-505.0	-1.5023	0.840	0.837	2.101
250.0	0.001624	-483.8	-1.4158	0.775	0.789	2.146
260.0	0.001652	-462.2	-1.3312	0.710	0.741	2.187
270.0	0.001681	-440.1	-1.2481	0.645	0.694	2.231
280.0	0.001713	-417.6	-1.1662	0.582	0.647	2.278
290.0	0.001746	-394.5	-1.0853	0.522	0.601	2.329
300.0	0.001783	-370.9	-1.0053	0.463	0.556	2.387
310.0	0.001823	-346.7	-0.9260	0.407	0.511	2.450
320.0	0.001867	-321.8	-0.8470	0.353	0.468	2.519
330.0	0.001916	-296.2	-0.7683	0.302	0.426	2.595
340.0	0.001971	-269.8	-0.6895	0.254	0.384	2.681
350.0	0.002035	-242.4	-0.6103	0.208	0.344	2.780
360.0	0.002110	-214.0	-0.5303	0.1649	0.303	2.901
370.0	0.002202	-184.2	-0.4486	0.1237	0.263	3.060
380.0	0.002322	-152.4	-0.3640	0.0843	0.221	3.303
388.03	0.002460	-124.5	-0.2914	0.0535	0.185	3.669
COEXISTING VAPOR (x=.0658)						
388.03	0.01374	64.3	0.1826	0.0146	0.01608	3.440
			VAPOR			
COEXISTING LIQUID (x=.1473)						
390.13	0.002446	-127.0	-0.2823	0.0548	0.185	3.635
390.13	0.01369	63.2	0.1912	0.0145	0.01602	3.444
400.0	0.01543	94.4	0.2702	0.0207	0.01331	2.958
410.0	0.01683	123.0	0.3408	0.0256	0.01165	2.771
420.0	0.01805	150.3	0.4065	0.0298	0.01049	2.684
430.0	0.01915	176.9	0.4691	0.0335	0.00962	2.642
440.0	0.02017	203.3	0.5297	0.0368	0.00893	2.625
450.0	0.02114	229.5	0.5887	0.0399	0.00837	2.624
460.0	0.02206	255.8	0.6465	0.0428	0.00790	2.632
470.0	0.02294	282.2	0.7033	0.0455	0.00750	2.647
480.0	0.02380	308.8	0.7592	0.0481	0.00715	2.666
490.0	0.02463	335.6	0.8144	0.0506	0.00684	2.689
500.0	0.02544	362.6	0.8690	0.0531	0.00657	2.714
510.0	0.02623	389.8	0.9229	0.0554	0.00632	2.740
520.0	0.02701	417.4	0.9764	0.0577	0.00610	2.768
530.0	0.02778	445.2	1.0294	0.0599	0.00589	2.796
540.0	0.02853	473.3	1.0819	0.0621	0.00571	2.825
550.0	0.02928	501.7	1.1340	0.0642	0.00553	2.855
560.0	0.03001	530.4	1.1857	0.0663	0.00537	2.884
570.0	0.03074	559.4	1.2370	0.0684	0.00522	2.914
580.0	0.03146	588.7	1.2880	0.0704	0.00508	2.944
590.0	0.03217	618.3	1.3386	0.0724	0.00495	2.974
600.0	0.03288	648.2	1.3888	0.0744	0.00482	3.003

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=2.6 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001597	-504.8	-1.5028	0.845	0.841	2.101
250.0	0.001623	-483.6	-1.4164	0.780	0.793	2.145
260.0	0.001651	-462.0	-1.3318	0.715	0.745	2.187
270.0	0.001680	-440.0	-1.2487	0.650	0.697	2.230
280.0	0.001712	-417.4	-1.1668	0.587	0.650	2.276
290.0	0.001745	-394.4	-1.0860	0.526	0.604	2.328
300.0	0.001782	-370.8	-1.0061	0.467	0.559	2.385
310.0	0.001821	-346.6	-0.9268	0.411	0.514	2.447
320.0	0.001865	-321.7	-0.8480	0.358	0.471	2.516
330.0	0.001913	-296.1	-0.7694	0.307	0.429	2.591
340.0	0.001968	-269.8	-0.6907	0.258	0.387	2.675
350.0	0.002031	-242.5	-0.6117	0.213	0.347	2.773
360.0	0.002104	-214.1	-0.5319	0.1696	0.307	2.889
370.0	0.002194	-184.5	-0.4507	0.1286	0.267	3.041
380.0	0.002310	-153.0	-0.3667	0.0896	0.226	3.264
390.0	0.002479	-118.4	-0.2770	0.0519	0.181	3.698
392.71	0.002544	-108.1	-0.2505	0.0417	0.168	3.923
COEXISTING VAPOR (x=.0682)						
392.71	0.01224	66.5	0.1825	0.0125	0.01852	3.793
			VAPOR			
COEXISTING LIQUID (x=.1429)						
394.66	0.002529	-110.2	-0.2422	0.0428	0.169	3.880
394.66	0.01219	65.6	0.1906	0.0125	0.01846	3.794
400.0	0.01323	84.4	0.2379	0.0164	0.01630	3.309
410.0	0.01476	115.4	0.3145	0.0222	0.01380	2.942
420.0	0.01601	144.0	0.3834	0.0269	0.01220	2.789
430.0	0.01711	171.5	0.4482	0.0309	0.01106	2.715
440.0	0.01812	198.5	0.5102	0.0345	0.01018	2.679
450.0	0.01906	225.2	0.5702	0.0378	0.00948	2.666
460.0	0.01995	251.9	0.6288	0.0409	0.00891	2.666
470.0	0.02080	278.6	0.6863	0.0438	0.00842	2.675
480.0	0.02162	305.4	0.7428	0.0465	0.00800	2.690
490.0	0.02242	332.4	0.7984	0.0492	0.00764	2.709
500.0	0.02319	359.6	0.8534	0.0517	0.00731	2.731
510.0	0.02394	387.1	0.9077	0.0541	0.00702	2.756
520.0	0.02468	414.7	0.9614	0.0565	0.00676	2.782
530.0	0.02540	442.7	1.0146	0.0588	0.00653	2.809
540.0	0.02611	470.9	1.0674	0.0610	0.00631	2.837
550.0	0.02681	499.4	1.1197	0.0632	0.00611	2.865
560.0	0.02750	528.2	1.1716	0.0654	0.00593	2.894
570.0	0.02819	557.3	1.2230	0.0675	0.00576	2.923
580.0	0.02886	586.7	1.2741	0.0696	0.00560	2.952
590.0	0.02953	616.4	1.3249	0.0716	0.00545	2.981
600.0	0.03020	646.3	1.3753	0.0737	0.00530	3.010

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=2.8 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001597	-504.6	-1.5033	0.850	0.845	2.100
250.0	0.001623	-483.4	-1.4169	0.785	0.796	2.144
260.0	0.001650	-461.8	-1.3323	0.720	0.748	2.186
270.0	0.001679	-439.8	-1.2493	0.655	0.700	2.228
280.0	0.001711	-417.3	-1.1675	0.592	0.653	2.275
290.0	0.001744	-394.2	-1.0867	0.530	0.607	2.326
300.0	0.001780	-370.6	-1.0068	0.472	0.561	2.383
310.0	0.001820	-346.4	-0.9276	0.415	0.517	2.445
320.0	0.001863	-321.6	-0.8489	0.362	0.474	2.512
330.0	0.001911	-296.1	-0.7704	0.311	0.432	2.587
340.0	0.001965	-269.8	-0.6919	0.263	0.391	2.670
350.0	0.002027	-242.5	-0.6130	0.217	0.350	2.765
360.0	0.002099	-214.3	-0.5335	0.1742	0.310	2.878
370.0	0.002186	-184.8	-0.4527	0.1335	0.271	3.023
380.0	0.002298	-153.5	-0.3694	0.0948	0.230	3.230
390.0	0.002457	-119.5	-0.2811	0.0577	0.187	3.603
397.13	0.002638	-91.8	-0.2106	0.0314	0.152	4.271
COEXISTING VAPOR (x=.0708)						
397.13	0.01090	67.6	0.1805	0.0104	0.02134	4.281
VAPOR						
COEXISTING LIQUID (x=.1385)						
398.93	0.002624	-93.7	-0.2030	0.0324	0.153	4.214
398.93	0.01086	66.9	0.1881	0.0104	0.02126	4.277
400.0	0.01111	71.3	0.1992	0.0114	0.02056	4.058
410.0	0.01289	106.6	0.2864	0.0185	0.01646	3.198
420.0	0.01422	137.1	0.3599	0.0239	0.01420	2.927
430.0	0.01534	165.7	0.4272	0.0283	0.01268	2.803
440.0	0.01635	193.5	0.4909	0.0322	0.01156	2.742
450.0	0.01728	220.8	0.5522	0.0358	0.01069	2.713
460.0	0.01814	247.8	0.6118	0.0390	0.00999	2.703
470.0	0.01897	274.9	0.6699	0.0421	0.00940	2.705
480.0	0.01976	302.0	0.7270	0.0450	0.00891	2.715
490.0	0.02052	329.2	0.7831	0.0477	0.00847	2.731
500.0	0.02125	356.6	0.8385	0.0503	0.00810	2.750
510.0	0.02197	384.2	0.8931	0.0529	0.00776	2.772
520.0	0.02268	412.1	0.9472	0.0553	0.00746	2.796
530.0	0.02336	440.2	1.0007	0.0577	0.00719	2.822
540.0	0.02404	468.5	1.0537	0.0600	0.00694	2.848
550.0	0.02470	497.1	1.1062	0.0623	0.00671	2.876
560.0	0.02536	526.0	1.1582	0.0645	0.00650	2.904
570.0	0.02600	555.2	1.2099	0.0666	0.00631	2.932
580.0	0.02664	584.7	1.2611	0.0688	0.00613	2.960
590.0	0.02727	614.4	1.3120	0.0709	0.00596	2.989
600.0	0.02790	644.5	1.3625	0.0729	0.00580	3.017

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=3.0 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001596	-504.4	-1.5038	0.856	0.848	2.099
250.0	0.001622	-483.2	-1.4174	0.790	0.800	2.144
260.0	0.001649	-461.6	-1.3329	0.724	0.751	2.185
270.0	0.001678	-439.6	-1.2499	0.660	0.703	2.227
280.0	0.001710	-417.1	-1.1681	0.596	0.656	2.274
290.0	0.001743	-394.1	-1.0874	0.535	0.610	2.325
300.0	0.001779	-370.5	-1.0076	0.476	0.564	2.381
310.0	0.001818	-346.3	-0.9285	0.420	0.520	2.442
320.0	0.001861	-321.5	-0.8498	0.366	0.477	2.510
330.0	0.001909	-296.0	-0.7714	0.315	0.435	2.583
340.0	0.001962	-269.8	-0.6930	0.267	0.394	2.665
350.0	0.002023	-242.6	-0.6143	0.222	0.353	2.758
360.0	0.002094	-214.4	-0.5351	0.1788	0.314	2.868
370.0	0.002179	-185.0	-0.4546	0.1383	0.274	3.006
380.0	0.002287	-154.0	-0.3719	0.0998	0.235	3.199
390.0	0.002436	-120.5	-0.2849	0.0632	0.193	3.527
400.0	0.002694	-81.6	-0.1864	0.0275	0.145	4.464
401.33	0.002750	-75.4	-0.1710	0.0226	0.137	4.790
COEXISTING VAPOR (x=.0735)						
401.33	0.00968	67.6	0.1761	0.0083	0.02464	5.011
			VAPOR			
COEXISTING LIQUID (x=.1339)						
402.96	0.002735	-77.1	-0.1642	0.0234	0.138	4.708
402.96	0.00966	66.9	0.1831	0.0083	0.02455	4.998
410.0	0.01115	96.1	0.2549	0.0145	0.01992	3.632
420.0	0.01261	129.4	0.3352	0.0207	0.01658	3.116
430.0	0.01378	159.5	0.4060	0.0257	0.01454	2.915
440.0	0.01479	188.2	0.4718	0.0299	0.01310	2.817
450.0	0.01571	216.1	0.5345	0.0337	0.01202	2.768
460.0	0.01657	243.7	0.5951	0.0372	0.01116	2.745
470.0	0.01737	271.1	0.6541	0.0404	0.01046	2.739
480.0	0.01813	298.5	0.7118	0.0434	0.00987	2.743
490.0	0.01887	326.0	0.7685	0.0463	0.00936	2.754
500.0	0.01958	353.6	0.8243	0.0490	0.00892	2.770
510.0	0.02027	381.4	0.8793	0.0516	0.00853	2.789
520.0	0.02094	409.4	0.9336	0.0541	0.00819	2.811
530.0	0.02160	437.6	0.9874	0.0566	0.00787	2.835
540.0	0.02224	466.1	1.0406	0.0590	0.00759	2.860
550.0	0.02287	494.8	1.0933	0.0613	0.00733	2.887
560.0	0.02350	523.8	1.1456	0.0636	0.00710	2.913
570.0	0.02411	553.1	1.1974	0.0658	0.00688	2.941
580.0	0.02472	582.7	1.2488	0.0680	0.00667	2.969
590.0	0.02531	612.5	1.2998	0.0701	0.00648	2.996
600.0	0.02591	642.7	1.3505	0.0722	0.00631	3.024

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=3.2 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001595	-504.2	-1.5043	0.861	0.852	2.099
250.0	0.001621	-483.0	-1.4180	0.795	0.803	2.143
260.0	0.001649	-461.4	-1.3335	0.729	0.755	2.184
270.0	0.001678	-439.5	-1.2505	0.664	0.706	2.226
280.0	0.001709	-416.9	-1.1688	0.601	0.659	2.272
290.0	0.001742	-393.9	-1.0881	0.539	0.612	2.323
300.0	0.001778	-370.4	-1.0083	0.480	0.567	2.379
310.0	0.001817	-346.2	-0.9293	0.4241	0.523	2.440
320.0	0.001859	-321.5	-0.8507	0.3706	0.479	2.507
330.0	0.001906	-296.0	-0.7724	0.3198	0.437	2.580
340.0	0.001959	-269.7	-0.6941	0.2717	0.396	2.660
350.0	0.002019	-242.7	-0.6156	0.2263	0.356	2.752
360.0	0.002089	-214.6	-0.5366	0.1834	0.317	2.858
370.0	0.002172	-185.3	-0.4564	0.1430	0.278	2.991
380.0	0.002277	-154.5	-0.3743	0.1048	0.239	3.171
390.0	0.002418	-121.4	-0.2884	0.0686	0.198	3.464
400.0	0.002646	-83.8	-0.1933	0.0339	0.153	4.168
405.32	0.002887	-58.7	-0.1308	0.0150	0.122	5.655
COEXISTING VAPOR (x=.0766)						
405.32	0.00855	65.8	0.1684	0.0062	0.02866	6.236
			VAPOR			
COEXISTING LIQUID (x=.1291)						
406.76	0.002872	-60.0	-0.1250	0.0156	0.123	5.528
406.76	0.00853	65.4	0.1748	0.0062	0.02855	6.203
410.0	0.00941	82.3	0.2163	0.0098	0.02491	4.581
420.0	0.01113	120.7	0.3087	0.0173	0.01950	3.395
430.0	0.01237	152.7	0.3841	0.0229	0.01669	3.058
440.0	0.01341	182.5	0.4526	0.0275	0.01483	2.907
450.0	0.01433	211.2	0.5170	0.0316	0.01348	2.831
460.0	0.01518	239.3	0.5788	0.0353	0.01243	2.792
470.0	0.01597	267.2	0.6387	0.0387	0.01159	2.776
480.0	0.01671	294.9	0.6971	0.0418	0.01089	2.773
490.0	0.01742	322.7	0.7543	0.0448	0.01030	2.779
500.0	0.01811	350.5	0.8105	0.0476	0.00979	2.791
510.0	0.01878	378.5	0.8660	0.0504	0.00934	2.807
520.0	0.01942	406.7	0.9206	0.0530	0.00894	2.827
530.0	0.02005	435.0	0.9747	0.0555	0.00859	2.849
540.0	0.02067	463.6	1.0282	0.0580	0.00827	2.873
550.0	0.02127	492.5	1.0811	0.0604	0.00798	2.898
560.0	0.02187	521.6	1.1336	0.0627	0.00771	2.924
570.0	0.02245	551.0	1.1855	0.0650	0.00746	2.950
580.0	0.02303	580.7	1.2371	0.0672	0.00724	2.977
590.0	0.02360	610.6	1.2883	0.0694	0.00703	3.004
600.0	0.02417	640.8	1.3391	0.0716	0.00683	3.032

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=3.4 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001595	-504.0	-1.5048	0.867	0.856	2.098
250.0	0.001621	-482.8	-1.4185	0.800	0.807	2.142
260.0	0.001648	-461.3	-1.3340	0.734	0.758	2.183
270.0	0.001677	-439.3	-1.2511	0.669	0.709	2.225
280.0	0.001708	-416.8	-1.1694	0.605	0.662	2.271
290.0	0.001741	-393.8	-1.0888	0.544	0.615	2.322
300.0	0.001776	-370.2	-1.0091	0.485	0.570	2.377
310.0	0.001815	-346.1	-0.9301	0.4285	0.525	2.438
320.0	0.001857	-321.4	-0.8516	0.3749	0.482	2.504
330.0	0.001904	-295.9	-0.7734	0.3241	0.440	2.576
340.0	0.001956	-269.7	-0.6953	0.2760	0.399	2.656
350.0	0.002016	-242.7	-0.6169	0.2307	0.359	2.745
360.0	0.002084	-214.7	-0.5381	0.1879	0.320	2.849
370.0	0.002166	-185.5	-0.4583	0.1476	0.282	2.977
380.0	0.002267	-154.9	-0.3767	0.1097	0.243	3.146
390.0	0.002402	-122.2	-0.2917	0.0739	0.203	3.410
400.0	0.002609	-85.7	-0.1992	0.0398	0.160	3.971
409.13	0.003070	-40.8	-0.0883	0.0087	0.107	7.400
COEXISTING VAPOR (x=.0804)						
409.13	0.00744	61.7	0.1555	0.0041	0.03385	8.725
VAPOR						
COEXISTING LIQUID (x=.1236)						
410.34	0.003054	-41.9	-0.0837	0.0092	0.108	7.166
410.34	0.00743	61.4	0.1611	0.0041	0.03371	8.635
420.0	0.00973	110.3	0.2790	0.0137	0.02325	3.848
430.0	0.01109	145.3	0.3613	0.0200	0.01921	3.249
440.0	0.01217	176.5	0.4330	0.0251	0.01678	3.018
450.0	0.01310	206.1	0.4995	0.0295	0.01508	2.905
460.0	0.01394	234.8	0.5627	0.0334	0.01381	2.846
470.0	0.01472	263.1	0.6235	0.0370	0.01280	2.817
480.0	0.01545	291.2	0.6827	0.0403	0.01198	2.805
490.0	0.01615	319.3	0.7405	0.0434	0.01129	2.805
500.0	0.01681	347.4	0.7973	0.0463	0.01070	2.813
510.0	0.01746	375.6	0.8531	0.0491	0.01019	2.827
520.0	0.01808	403.9	0.9081	0.0518	0.00973	2.844
530.0	0.01869	432.4	0.9625	0.0544	0.00933	2.864
540.0	0.01928	461.2	1.0162	0.0570	0.00897	2.886
550.0	0.01986	490.2	1.0694	0.0594	0.00864	2.910
560.0	0.02043	519.4	1.1220	0.0618	0.00834	2.934
570.0	0.02099	548.9	1.1742	0.0642	0.00807	2.960
580.0	0.02155	578.6	1.2260	0.0664	0.00782	2.986
590.0	0.02209	608.7	1.2773	0.0687	0.00758	3.012
600.0	0.02263	639.0	1.3282	0.0709	0.00736	3.039

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P=3.6 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001594	-503.8	-1.5053	0.872	0.860	2.097
250.0	0.001620	-482.6	-1.4190	0.806	0.810	2.141
260.0	0.001647	-461.1	-1.3346	0.739	0.761	2.182
270.0	0.001676	-439.1	-1.2517	0.674	0.712	2.224
280.0	0.001707	-416.6	-1.1701	0.610	0.665	2.270
290.0	0.001739	-393.6	-1.0895	0.548	0.618	2.320
300.0	0.001775	-370.1	-1.0098	0.489	0.572	2.375
310.0	0.001813	-346.0	-0.9309	0.4328	0.528	2.436
320.0	0.001855	-321.3	-0.8525	0.3792	0.485	2.501
330.0	0.001902	-295.9	-0.7744	0.3284	0.443	2.572
340.0	0.001953	-269.7	-0.6964	0.2803	0.402	2.651
350.0	0.002012	-242.7	-0.6182	0.2350	0.363	2.739
360.0	0.002080	-214.8	-0.5396	0.1924	0.324	2.840
370.0	0.002160	-185.8	-0.4600	0.1522	0.285	2.963
380.0	0.002258	-155.3	-0.3789	0.1145	0.247	3.124
390.0	0.002387	-122.9	-0.2948	0.0790	0.208	3.363
400.0	0.002577	-87.2	-0.2044	0.0455	0.166	3.828
410.0	0.002983	-42.1	-0.0930	0.0134	0.115	5.919
412.80	0.003359	-19.9	-0.0391	0.0037	0.091	12.568
COEXISTING VAPOR (x=.0857)						
412.80	0.00625	52.6	0.1321	0.0242	0.0403	13.758
			VAPOR			
COEXISTING LIQUID (x=.1164)						
413.68	0.003341	-20.8	-0.0362	0.0040	0.091	11.944
413.68	0.00627	52.8	0.1365	0.0025	0.0399	13.377
420.0	0.00834	97.1	0.2433	0.0098	0.0284	4.731
430.0	0.00991	136.8	0.3368	0.0171	0.0222	3.516
440.0	0.01105	170.0	0.4129	0.0227	0.01901	3.155
450.0	0.01200	200.6	0.4819	0.0274	0.01687	2.991
460.0	0.01284	230.1	0.5466	0.0315	0.01531	2.906
470.0	0.01361	258.9	0.6086	0.0353	0.01411	2.862
480.0	0.01433	287.4	0.6686	0.0387	0.01314	2.841
490.0	0.01501	315.8	0.7271	0.0420	0.01234	2.834
500.0	0.01566	344.2	0.7844	0.0450	0.01166	2.837
510.0	0.01629	372.6	0.8407	0.0479	0.01107	2.847
520.0	0.01689	401.1	0.8961	0.0507	0.01056	2.861
530.0	0.01748	429.8	0.9507	0.0534	0.01011	2.879
540.0	0.01805	458.7	1.0047	0.0560	0.00970	2.899
550.0	0.01861	487.8	1.0581	0.0585	0.00933	2.922
560.0	0.01916	517.2	1.1110	0.0610	0.00900	2.945
570.0	0.01970	546.8	1.1634	0.0634	0.00869	2.970
580.0	0.02023	576.6	1.2153	0.0657	0.00841	2.995
590.0	0.02075	606.7	1.2667	0.0680	0.00815	3.021
600.0	0.02127	637.1	1.3178	0.0702	0.00791	3.047

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 3.8 MPa

	T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
	240.0	0.001594	-503.6	-1.5058	0.877	0.864	2.097
	250.0	0.001619	-482.5	-1.4196	0.811	0.814	2.141
	260.0	0.001646	-460.9	-1.3351	0.744	0.764	2.181
	270.0	0.001675	-438.9	-1.2523	0.678	0.715	2.223
	280.0	0.001706	-416.5	-1.1707	0.614	0.668	2.269
	290.0	0.001738	-393.5	-1.0902	0.553	0.621	2.319
	300.0	0.001774	-370.0	-1.0106	0.493	0.575	2.374
	310.0	0.001812	-345.9	-0.9317	0.437	0.531	2.433
	320.0	0.001854	-321.2	-0.8534	0.383	0.488	2.498
	330.0	0.001900	-295.8	-0.7753	0.333	0.446	2.569
	340.0	0.001951	-269.7	-0.6975	0.285	0.405	2.646
	350.0	0.002009	-242.8	-0.6194	0.2394	0.366	2.733
	360.0	0.002075	-214.9	-0.5410	0.1968	0.327	2.832
	370.0	0.002153	-186.0	-0.4618	0.1568	0.289	2.950
	380.0	0.002249	-155.7	-0.3811	0.1192	0.251	3.103
	385.0	0.002306	-139.9	-0.3398	0.1013	0.232	3.201
	390.0	0.002372	-123.6	-0.2977	0.0840	0.212	3.323
	395.0	0.002451	-106.6	-0.2543	0.0672	0.193	3.484
	400.0	0.002549	-88.6	-0.2091	0.0510	0.172	3.718
	405.0	0.002679	-69.1	-0.1606	0.0353	0.150	4.107
	410.0	0.002878	-46.6	-0.1056	0.0200	0.126	4.971
	415.0	0.003359	-14.0	-0.0265	0.0050	0.091	10.191
*	420.0	0.006810	77.9	0.1938	0.0054	0.0368	7.239
	425.0	0.007982	105.9	0.2603	0.0103	0.0298	4.665
	430.0	0.008789	127.1	0.3099	0.0141	0.0260	3.912
	435.0	0.009445	145.7	0.3528	0.0173	0.0235	3.546
	440.0	0.010014	162.9	0.3921	0.0202	0.0216	3.330
	445.0	0.010526	179.2	0.4289	0.0228	0.0201	3.190
	450.0	0.010995	194.9	0.4640	0.0253	0.0189	3.094
	460.0	0.011846	225.2	0.5306	0.0296	0.0170	2.975
	470.0	0.012615	254.6	0.5939	0.0336	0.0155	2.912
	480.0	0.013325	283.6	0.6548	0.0372	0.0144	2.879
	490.0	0.013993	312.3	0.7140	0.0406	0.0134	2.865
	500.0	0.01463	340.9	0.7719	0.0437	0.01267	2.862
	510.0	0.01524	369.6	0.8286	0.0467	0.01200	2.868
	520.0	0.01582	398.3	0.8844	0.0496	0.01142	2.879
	530.0	0.01639	427.2	0.9394	0.0524	0.01091	2.895
	540.0	0.01695	456.2	0.9936	0.0550	0.01046	2.913
	550.0	0.01749	485.5	1.0473	0.0576	0.01005	2.934
	560.0	0.01802	514.9	1.1004	0.0601	0.00968	2.956
	570.0	0.01854	544.6	1.1529	0.0626	0.00934	2.980
	580.0	0.01905	574.6	1.2050	0.0650	0.00903	3.004
	590.0	0.01955	604.8	1.2566	0.0673	0.00874	3.029
	600.0	0.02005	635.3	1.3078	0.0696	0.00847	3.054

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 4.0 MPa

	T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
	240.0	0.001593	-503.4	-1.5063	0.883	0.867	2.096
	250.0	0.001619	-482.3	-1.4201	0.816	0.817	2.140
	260.0	0.001646	-460.7	-1.3357	0.749	0.767	2.180
	270.0	0.001674	-438.8	-1.2529	0.683	0.718	2.222
	280.0	0.001705	-416.3	-1.1713	0.619	0.670	2.268
	290.0	0.001737	-393.3	-1.0908	0.557	0.624	2.317
	300.0	0.001772	-369.8	-1.0113	0.498	0.578	2.372
	310.0	0.001810	-345.8	-0.9325	0.441	0.533	2.431
	320.0	0.001852	-321.1	-0.8542	0.388	0.490	2.496
	330.0	0.001897	-295.8	-0.7763	0.337	0.449	2.566
	340.0	0.001948	-269.7	-0.6985	0.289	0.408	2.642
	350.0	0.002005	-242.8	-0.6207	0.2437	0.368	2.727
	360.0	0.002071	-215.0	-0.5424	0.2012	0.330	2.824
	370.0	0.002147	-186.2	-0.4635	0.1613	0.292	2.938
	380.0	0.002241	-156.0	-0.3832	0.1239	0.255	3.083
	385.0	0.002296	-140.4	-0.3422	0.1061	0.236	3.175
	390.0	0.002359	-124.2	-0.3005	0.0889	0.217	3.287
	395.0	0.002434	-107.4	-0.2577	0.0723	0.198	3.431
	400.0	0.002525	-89.7	-0.2133	0.0563	0.178	3.630
	405.0	0.002641	-70.8	-0.1663	0.0409	0.157	3.937
	410.0	0.002807	-49.8	-0.1148	0.0261	0.134	4.511
	415.0	0.003098	-24.0	-0.0521	0.0120	0.107	6.164
*	420.0	0.004560	35.0	0.0890	0.0016	0.0595	21.740
	425.0	0.006700	89.3	0.2177	0.0067	0.0372	6.314
	430.0	0.007704	115.6	0.2792	0.0110	0.0308	4.548
	435.0	0.008444	136.5	0.3276	0.0146	0.0272	3.897
	440.0	0.009057	155.1	0.3700	0.0177	0.0246	3.559
	445.0	0.009594	172.4	0.4090	0.0206	0.0226	3.353
	450.0	0.010079	188.8	0.4457	0.0231	0.0211	3.217
	460.0	0.010943	220.1	0.5145	0.0278	0.0188	3.055
	470.0	0.011712	250.2	0.5792	0.0319	0.0170	2.968
	480.0	0.012417	279.6	0.6412	0.0357	0.0157	2.921
	490.0	0.013076	308.7	0.7011	0.0392	0.0146	2.898
	500.0	0.01370	337.6	0.7596	0.0425	0.01374	2.889
	510.0	0.01429	366.5	0.8168	0.0456	0.01298	2.891
	520.0	0.01486	395.5	0.8730	0.0485	0.01232	2.899
	530.0	0.01542	424.5	0.9283	0.0514	0.01175	2.911
	540.0	0.01596	453.7	0.9829	0.0541	0.01124	2.928
	550.0	0.01648	483.1	1.0368	0.0568	0.01079	2.947
	560.0	0.01699	512.7	1.0901	0.0593	0.01037	2.968
	570.0	0.01749	542.5	1.1429	0.0618	0.01000	2.990
	580.0	0.01799	572.5	1.1951	0.0643	0.00966	3.013
	590.0	0.01847	602.8	1.2469	0.0666	0.00934	3.037
	600.0	0.01895	633.4	1.2982	0.0690	0.00905	3.062

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 4.2 MPa

	T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
	240.0	0.001592	-503.2	-1.5068	0.888	0.871	2.096
	250.0	0.001618	-482.1	-1.4206	0.821	0.820	2.139
	260.0	0.001645	-460.5	-1.3363	0.753	0.770	2.180
	270.0	0.001673	-438.6	-1.2535	0.687	0.721	2.221
	280.0	0.001704	-416.1	-1.1720	0.623	0.673	2.266
	290.0	0.001736	-393.2	-1.0915	0.561	0.626	2.316
	300.0	0.001771	-369.7	-1.0120	0.502	0.581	2.370
	310.0	0.001809	-345.7	-0.9333	0.446	0.536	2.429
	320.0	0.001850	-321.0	-0.8551	0.392	0.493	2.493
	330.0	0.001895	-295.7	-0.7773	0.341	0.451	2.562
	340.0	0.001945	-269.7	-0.6996	0.293	0.411	2.638
	350.0	0.002002	-242.8	-0.6219	0.248	0.371	2.721
	360.0	0.002066	-215.1	-0.5438	0.206	0.333	2.816
	370.0	0.002142	-186.4	-0.4651	0.1657	0.295	2.927
	375.0	0.002185	-171.5	-0.4254	0.1468	0.277	2.992
	380.0	0.002232	-156.4	-0.3852	0.1285	0.258	3.066
	385.0	0.002286	-140.8	-0.3446	0.1108	0.240	3.152
	390.0	0.002347	-124.8	-0.3032	0.0937	0.221	3.255
	395.0	0.002418	-108.2	-0.2609	0.0773	0.202	3.385
	400.0	0.002503	-90.8	-0.2172	0.0614	0.183	3.558
	405.0	0.002609	-72.4	-0.1714	0.0462	0.163	3.810
	410.0	0.002753	-52.3	-0.1222	0.0317	0.142	4.230
	415.0	0.002973	-29.2	-0.0662	0.0181	0.118	5.134
*	420.0	0.003460	3.0	0.0109	0.0061	0.0877	8.689
	425.0	0.005261	64.2	0.1557	0.0037	0.0500	10.381
	430.0	0.006621	101.2	0.2424	0.0080	0.0374	5.651
	435.0	0.007486	125.9	0.2995	0.0119	0.0317	4.410
	440.0	0.008161	146.4	0.3465	0.0153	0.0281	3.862
	445.0	0.008731	165.0	0.3883	0.0183	0.0256	3.557
	450.0	0.009236	182.2	0.4269	0.0211	0.0236	3.366
	460.0	0.010119	214.7	0.4982	0.0260	0.0207	3.145
	470.0	0.010892	245.5	0.5646	0.0303	0.0187	3.030
	480.0	0.011594	275.5	0.6277	0.0342	0.0171	2.967
	490.0	0.012244	305.0	0.6885	0.0379	0.0159	2.934
	500.0	0.01286	334.3	0.7476	0.0412	0.01486	2.918
	510.0	0.01344	363.4	0.8053	0.0444	0.01400	2.914
	520.0	0.01400	392.6	0.8619	0.0475	0.01326	2.918
	530.0	0.01454	421.8	0.9176	0.0504	0.01262	2.929
	540.0	0.01506	451.2	0.9725	0.0532	0.01205	2.943
	550.0	0.01557	480.7	1.0266	0.0559	0.01155	2.960
	560.0	0.01607	510.4	1.0802	0.0585	0.01109	2.979
	570.0	0.01655	540.3	1.1331	0.0611	0.01068	3.000
	580.0	0.01703	570.5	1.1855	0.0636	0.01031	3.023
	590.0	0.01750	600.9	1.2375	0.0660	0.00996	3.046
	600.0	0.01796	631.5	1.2890	0.0684	0.00964	3.070

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 4.4 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001592	-503.0	-1.5073	0.893	0.875	2.095
250.0	0.001617	-481.9	-1.4211	0.826	0.824	2.139
260.0	0.001644	-460.3	-1.3368	0.758	0.774	2.179
270.0	0.001673	-438.4	-1.2541	0.692	0.724	2.220
280.0	0.001703	-416.0	-1.1726	0.628	0.676	2.265
290.0	0.001735	-393.0	-1.0922	0.566	0.629	2.315
300.0	0.001770	-369.6	-1.0128	0.506	0.583	2.368
310.0	0.001807	-345.5	-0.9341	0.450	0.539	2.427
320.0	0.001848	-320.9	-0.8560	0.396	0.496	2.491
330.0	0.001893	-295.6	-0.7782	0.345	0.454	2.559
340.0	0.001943	-269.6	-0.7007	0.297	0.413	2.634
350.0	0.001999	-242.8	-0.6231	0.252	0.374	2.716
360.0	0.002062	-215.2	-0.5452	0.210	0.336	2.808
370.0	0.002136	-186.5	-0.4668	0.1701	0.299	2.916
375.0	0.002178	-171.8	-0.4272	0.1512	0.280	2.979
380.0	0.002225	-156.7	-0.3872	0.1330	0.262	3.049
385.0	0.002277	-141.2	-0.3468	0.1154	0.243	3.130
390.0	0.002335	-125.3	-0.3057	0.0984	0.225	3.226
395.0	0.002403	-108.9	-0.2639	0.0821	0.207	3.345
400.0	0.002483	-91.7	-0.2208	0.0664	0.188	3.498
405.0	0.002581	-73.7	-0.1760	0.0514	0.169	3.710
410.0	0.002709	-54.4	-0.1286	0.0371	0.148	4.037
415.0	0.002890	-32.8	-0.0763	0.0238	0.127	4.632
420.0	0.003202	-6.6	-0.0134	0.0118	0.1017	6.114
425.0	0.004029	34.4	0.0834	0.0041	0.0699	10.676
430.0	0.005527	82.8	0.1967	0.0057	0.0468	7.481
435.0	0.006560	113.4	0.2676	0.0094	0.0376	5.168
440.0	0.007314	136.7	0.3209	0.0130	0.0324	4.270
445.0	0.007927	156.9	0.3664	0.0162	0.0290	3.815
450.0	0.008456	175.2	0.4074	0.0190	0.0265	3.546
460.0	0.009363	209.1	0.4818	0.0242	0.0229	3.250
470.0	0.010143	240.8	0.5499	0.0287	0.0205	3.100
480.0	0.010843	271.3	0.6143	0.0328	0.0186	3.018
490.0	0.011488	301.3	0.6760	0.0365	0.0172	2.972
500.0	0.01209	330.9	0.7358	0.0400	0.01604	2.948
510.0	0.01266	360.3	0.7940	0.0433	0.01507	2.939
520.0	0.01321	389.7	0.8511	0.0465	0.01424	2.939
530.0	0.01374	419.1	0.9072	0.0494	0.01352	2.946
540.0	0.01425	448.6	0.9623	0.0523	0.01290	2.958
550.0	0.01474	478.3	1.0168	0.0551	0.01234	2.973
560.0	0.01522	508.2	1.0705	0.0578	0.01184	2.991
570.0	0.01570	538.2	1.1237	0.0604	0.01138	3.011
580.0	0.01616	568.5	1.1763	0.0629	0.01097	3.032
590.0	0.01661	599.0	1.2284	0.0654	0.01060	3.055
600.0	0.01706	629.7	1.2800	0.0678	0.01025	3.078

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 4.6 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001591	-502.8	-1.5078	0.898	0.878	2.095
250.0	0.001617	-481.7	-1.4217	0.831	0.827	2.138
260.0	0.001643	-460.2	-1.3374	0.763	0.777	2.178
270.0	0.001672	-438.2	-1.2547	0.697	0.727	2.219
280.0	0.001702	-415.8	-1.1732	0.632	0.679	2.264
290.0	0.001734	-392.9	-1.0929	0.570	0.632	2.313
300.0	0.001769	-369.4	-1.0135	0.511	0.586	2.367
310.0	0.001806	-345.4	-0.9349	0.454	0.541	2.425
320.0	0.001846	-320.8	-0.8568	0.400	0.498	2.488
330.0	0.001891	-295.6	-0.7792	0.349	0.457	2.556
340.0	0.001940	-269.6	-0.7017	0.302	0.416	2.630
350.0	0.001995	-242.9	-0.6243	0.256	0.377	2.711
360.0	0.002058	-215.3	-0.5466	0.214	0.339	2.801
370.0	0.002131	-186.7	-0.4684	0.1745	0.302	2.906
380.0	0.002217	-157.0	-0.3891	0.1375	0.265	3.033
385.0	0.002268	-141.6	-0.3490	0.1200	0.247	3.110
390.0	0.002324	-125.8	-0.3082	0.1031	0.229	3.200
395.0	0.002389	-109.5	-0.2667	0.0869	0.211	3.309
400.0	0.002465	-92.6	-0.2242	0.0713	0.193	3.446
405.0	0.002557	-74.9	-0.1802	0.0564	0.174	3.629
410.0	0.002672	-56.1	-0.1341	0.0423	0.155	3.894
415.0	0.002827	-35.6	-0.0844	0.0291	0.134	4.326
420.0	0.003064	-12.1	-0.0280	0.0172	0.1118	5.183
425.0	0.003521	18.5	0.0443	0.0079	0.0861	7.325
430.0	0.004544	61.5	0.1448	0.0050	0.0598	8.773
435.0	0.005672	98.7	0.2310	0.0075	0.0451	6.184
440.0	0.006511	125.8	0.2929	0.0109	0.0376	4.807
445.0	0.007174	148.0	0.3431	0.0141	0.0330	4.139
450.0	0.007732	167.7	0.3871	0.0171	0.0298	3.763
460.0	0.008667	203.2	0.4650	0.0225	0.0253	3.369
470.0	0.009456	235.8	0.5352	0.0272	0.0224	3.177
480.0	0.010157	267.0	0.6009	0.0314	0.0203	3.072
490.0	0.010797	297.4	0.6636	0.0353	0.0186	3.013
500.0	0.01139	327.4	0.7241	0.0389	0.01729	2.981
510.0	0.01196	357.1	0.7830	0.0423	0.01619	2.965
520.0	0.01249	386.8	0.8405	0.0455	0.01526	2.961
530.0	0.01301	416.4	0.8970	0.0485	0.01446	2.965
540.0	0.01350	446.1	0.9525	0.0515	0.01377	2.974
550.0	0.01399	475.9	1.0072	0.0543	0.01315	2.987
560.0	0.01446	505.9	1.0612	0.0570	0.01260	3.004
570.0	0.01492	536.0	1.1145	0.0597	0.01211	3.022
580.0	0.01537	566.4	1.1673	0.0623	0.01166	3.042
590.0	0.01581	597.0	1.2196	0.0648	0.01125	3.064
600.0	0.01624	627.8	1.2714	0.0673	0.01087	3.086

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 4.8 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001591	-502.6	-1.5083	0.904	0.882	2.094
250.0	0.001616	-481.5	-1.4222	0.836	0.830	2.137
260.0	0.001643	-460.0	-1.3379	0.768	0.780	2.177
270.0	0.001671	-438.1	-1.2553	0.701	0.730	2.218
280.0	0.001701	-415.6	-1.1738	0.637	0.682	2.263
290.0	0.001733	-392.7	-1.0935	0.574	0.634	2.312
300.0	0.001767	-369.3	-1.0142	0.515	0.588	2.365
310.0	0.001804	-345.3	-0.9356	0.458	0.544	2.423
320.0	0.001845	-320.7	-0.8577	0.404	0.501	2.486
330.0	0.001889	-295.5	-0.7801	0.354	0.459	2.553
340.0	0.001938	-269.6	-0.7028	0.306	0.419	2.626
350.0	0.001992	-242.9	-0.6254	0.261	0.380	2.706
360.0	0.002054	-215.3	-0.5479	0.218	0.342	2.794
370.0	0.002126	-186.8	-0.4699	0.1788	0.305	2.896
380.0	0.002210	-157.2	-0.3910	0.1419	0.269	3.019
385.0	0.002259	-141.9	-0.3511	0.1245	0.251	3.092
390.0	0.002314	-126.3	-0.3106	0.1077	0.233	3.176
395.0	0.002376	-110.1	-0.2694	0.0915	0.215	3.277
400.0	0.002449	-93.4	-0.2274	0.0761	0.197	3.401
405.0	0.002534	-76.0	-0.1841	0.0613	0.179	3.561
410.0	0.002640	-57.6	-0.1391	0.0474	0.160	3.782
415.0	0.002777	-37.9	-0.0913	0.0343	0.141	4.117
420.0	0.002971	-16.0	-0.0387	0.0225	0.1202	4.693
425.0	0.003288	10.1	0.0230	0.0125	0.0977	5.852
430.0	0.003908	44.2	0.1028	0.0067	0.0735	7.716
435.0	0.004876	82.6	0.1916	0.0066	0.0546	7.044
440.0	0.005762	113.6	0.2624	0.0093	0.0440	5.441
445.0	0.006471	138.4	0.3183	0.0124	0.0377	4.529
450.0	0.007059	159.6	0.3659	0.0154	0.0335	4.020
460.0	0.008024	197.0	0.4479	0.0209	0.0280	3.505
470.0	0.008825	230.7	0.5204	0.0257	0.0245	3.262
480.0	0.009527	262.6	0.5876	0.0301	0.0220	3.131
490.0	0.010164	293.5	0.6514	0.0340	0.0201	3.057
500.0	0.01075	323.9	0.7127	0.0377	0.01860	3.015
510.0	0.01131	353.9	0.7721	0.0412	0.01736	2.993
520.0	0.01184	383.8	0.8302	0.0445	0.01633	2.984
530.0	0.01234	413.6	0.8870	0.0476	0.01544	2.984
540.0	0.01283	443.5	0.9428	0.0506	0.01467	2.990
550.0	0.01330	473.5	0.9978	0.0535	0.01399	3.001
560.0	0.01376	503.6	1.0521	0.0563	0.01339	3.016
570.0	0.01420	533.9	1.1056	0.0590	0.01285	3.033
580.0	0.01464	564.4	1.1586	0.0616	0.01236	3.052
590.0	0.01507	595.1	1.2111	0.0642	0.01191	3.073
600.0	0.01549	626.0	1.2630	0.0667	0.01150	3.094

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 5.0 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001590	-502.4	-1.5088	0.909	0.885	2.093
250.0	0.001615	-481.3	-1.4227	0.840	0.834	2.137
260.0	0.001642	-459.8	-1.3385	0.772	0.783	2.176
270.0	0.001670	-437.9	-1.2559	0.706	0.733	2.217
280.0	0.001700	-415.5	-1.1745	0.641	0.684	2.262
290.0	0.001732	-392.6	-1.0942	0.579	0.637	2.310
300.0	0.001766	-369.1	-1.0149	0.519	0.591	2.364
310.0	0.001803	-345.2	-0.9364	0.462	0.547	2.421
320.0	0.001843	-320.6	-0.8585	0.409	0.503	2.483
330.0	0.001887	-295.4	-0.7810	0.358	0.462	2.550
340.0	0.001935	-269.5	-0.7038	0.310	0.422	2.622
350.0	0.001989	-242.9	-0.6266	0.265	0.383	2.701
360.0	0.002050	-215.4	-0.5492	0.223	0.345	2.788
370.0	0.002120	-187.0	-0.4715	0.1831	0.308	2.887
380.0	0.002203	-157.5	-0.3929	0.1463	0.272	3.005
385.0	0.002251	-142.3	-0.3531	0.1289	0.254	3.075
390.0	0.002304	-126.7	-0.3129	0.1122	0.237	3.154
395.0	0.002364	-110.7	-0.2720	0.0961	0.219	3.248
400.0	0.002433	-94.1	-0.2304	0.0808	0.201	3.361
405.0	0.002514	-76.9	-0.1878	0.0661	0.184	3.503
410.0	0.002612	-58.9	-0.1436	0.0523	0.165	3.693
415.0	0.002735	-39.8	-0.0972	0.0393	0.147	3.963
420.0	0.002901	-19.0	-0.0473	0.0275	0.1275	4.385
425.0	0.003147	4.7	0.0086	0.0173	0.1070	5.121
430.0	0.003562	33.3	0.0755	0.0099	0.0851	6.372
435.0	0.004264	67.7	0.1552	0.0072	0.0652	7.041
440.0	0.005093	100.7	0.2306	0.0084	0.0515	5.996
445.0	0.005823	128.0	0.2922	0.0110	0.0432	4.956
450.0	0.006436	151.0	0.3437	0.0139	0.0378	4.312
460.0	0.007430	190.5	0.4304	0.0194	0.0310	3.658
470.0	0.008242	225.4	0.5055	0.0243	0.0268	3.356
480.0	0.008947	258.1	0.5743	0.0288	0.0239	3.195
490.0	0.009582	289.6	0.6392	0.0329	0.0217	3.103
500.0	0.01017	320.3	0.7014	0.0367	0.01998	3.050
510.0	0.01071	350.7	0.7615	0.0402	0.01859	3.021
520.0	0.01123	380.8	0.8200	0.0436	0.01744	3.007
530.0	0.01173	410.9	0.8772	0.0468	0.01646	3.003
540.0	0.01220	440.9	0.9334	0.0498	0.01561	3.007
550.0	0.01266	471.1	0.9887	0.0528	0.01486	3.016
560.0	0.01311	501.3	1.0432	0.0556	0.01420	3.029
570.0	0.01355	531.7	1.0970	0.0584	0.01361	3.045
580.0	0.01397	562.3	1.1502	0.0610	0.01308	3.062
590.0	0.01439	593.1	1.2028	0.0637	0.01260	3.082
600.0	0.01480	624.1	1.2549	0.0662	0.01215	3.103

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 5.5 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001589	-501.9	-1.5100	0.922	0.894	2.092
250.0	0.001614	-480.8	-1.4240	0.853	0.842	2.135
260.0	0.001640	-459.3	-1.3398	0.784	0.790	2.174
270.0	0.001668	-437.4	-1.2573	0.717	0.740	2.215
280.0	0.001698	-415.0	-1.1760	0.652	0.691	2.259
290.0	0.001729	-392.2	-1.0958	0.589	0.643	2.307
300.0	0.001763	-368.8	-1.0167	0.530	0.597	2.360
310.0	0.001799	-344.9	-0.9383	0.473	0.553	2.416
320.0	0.001839	-320.4	-0.8606	0.419	0.510	2.477
330.0	0.001882	-295.2	-0.7833	0.368	0.468	2.543
340.0	0.001929	-269.4	-0.7063	0.320	0.428	2.613
350.0	0.001982	-242.9	-0.6294	0.275	0.389	2.689
360.0	0.002041	-215.5	-0.5525	0.233	0.352	2.772
370.0	0.002108	-187.3	-0.4752	0.1936	0.315	2.866
380.0	0.002187	-158.1	-0.3973	0.1571	0.280	2.974
385.0	0.002232	-143.0	-0.3579	0.1398	0.263	3.037
390.0	0.002281	-127.6	-0.3183	0.1232	0.245	3.107
395.0	0.002337	-111.9	-0.2782	0.1073	0.228	3.186
400.0	0.002399	-95.7	-0.2375	0.0921	0.211	3.279
405.0	0.002470	-79.0	-0.1960	0.0777	0.194	3.391
410.0	0.002554	-61.7	-0.1535	0.0640	0.177	3.529
415.0	0.002654	-43.6	-0.1096	0.0512	0.160	3.707
420.0	0.002779	-24.5	-0.0638	0.0395	0.1428	3.948
425.0	0.002941	-3.9	-0.0151	0.0289	0.1250	4.291
430.0	0.003166	18.8	0.0380	0.0201	0.1070	4.790
435.0	0.003495	44.4	0.0971	0.0138	0.0890	5.431
440.0	0.003966	72.8	0.1622	0.0106	0.0727	5.836
445.0	0.004543	101.7	0.2273	0.0104	0.0599	5.573
450.0	0.005127	128.1	0.2865	0.0119	0.0509	4.989
460.0	0.006145	173.1	0.3853	0.0165	0.0398	4.085
470.0	0.006977	211.4	0.4677	0.0213	0.0334	3.621
480.0	0.007687	246.3	0.5412	0.0259	0.0291	3.373
490.0	0.008316	279.3	0.6092	0.0302	0.0261	3.232
500.0	0.008889	311.2	0.6736	0.0342	0.0238	3.148
510.0	0.009421	342.4	0.7354	0.0379	0.0219	3.098
520.0	0.009921	373.2	0.7953	0.0414	0.0204	3.069
530.0	0.010396	403.9	0.8536	0.0448	0.0192	3.055
540.0	0.010850	434.4	0.9107	0.0480	0.0181	3.051
550.0	0.011288	465.0	0.9667	0.0511	0.0172	3.054
560.0	0.011711	495.6	1.0219	0.0540	0.0163	3.062
570.0	0.012123	526.3	1.0762	0.0569	0.0156	3.074
580.0	0.012524	557.2	1.1299	0.0597	0.0150	3.089
590.0	0.012916	588.2	1.1830	0.0624	0.0144	3.105
600.0	0.013301	619.5	1.2354	0.0650	0.0138	3.124

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 6.0 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001587	-501.4	-1.5113	0.935	0.903	2.091
250.0	0.001612	-480.3	-1.4253	0.865	0.850	2.133
260.0	0.001638	-458.9	-1.3412	0.796	0.798	2.173
270.0	0.001666	-437.0	-1.2587	0.728	0.747	2.213
280.0	0.001695	-414.6	-1.1775	0.663	0.698	2.256
290.0	0.001727	-391.8	-1.0975	0.600	0.650	2.304
300.0	0.001760	-368.4	-1.0184	0.540	0.604	2.356
310.0	0.001796	-344.6	-0.9402	0.483	0.559	2.412
320.0	0.001835	-320.1	-0.8626	0.429	0.516	2.472
330.0	0.001877	-295.0	-0.7856	0.378	0.474	2.536
340.0	0.001923	-269.3	-0.7088	0.330	0.434	2.604
350.0	0.001975	-242.8	-0.6322	0.285	0.396	2.678
360.0	0.002032	-215.6	-0.5556	0.243	0.358	2.758
370.0	0.002097	-187.6	-0.4787	0.204	0.322	2.847
380.0	0.002172	-158.6	-0.4014	0.168	0.288	2.948
385.0	0.002215	-143.7	-0.3625	0.150	0.270	3.004
390.0	0.002261	-128.5	-0.3233	0.134	0.254	3.067
395.0	0.002312	-112.9	-0.2838	0.118	0.237	3.137
400.0	0.002369	-97.0	-0.2438	0.103	0.220	3.216
405.0	0.002433	-80.7	-0.2032	0.089	0.204	3.307
410.0	0.002507	-63.9	-0.1619	0.075	0.188	3.415
415.0	0.002593	-46.5	-0.1197	0.062	0.172	3.546
420.0	0.002695	-28.3	-0.0762	0.0508	0.1555	3.710
425.0	0.002819	-9.2	-0.0311	0.0401	0.1392	3.919
430.0	0.002977	11.1	0.0164	0.0307	0.1230	4.192
435.0	0.003183	32.9	0.0668	0.0230	0.1070	4.535
440.0	0.003458	56.5	0.1209	0.0174	0.0916	4.905
445.0	0.003815	81.8	0.1780	0.0143	0.0777	5.137
450.0	0.004242	107.5	0.2354	0.0133	0.0662	5.075
460.0	0.005142	155.3	0.3405	0.0154	0.0505	4.441
470.0	0.005953	196.8	0.4298	0.0194	0.0412	3.896
480.0	0.006655	234.0	0.5081	0.0238	0.0353	3.567
490.0	0.007276	268.7	0.5796	0.0281	0.0311	3.372
500.0	0.007837	301.8	0.6465	0.0321	0.0280	3.254
510.0	0.008355	334.0	0.7101	0.0360	0.0256	3.181
520.0	0.008838	365.5	0.7715	0.0396	0.0237	3.136
530.0	0.009295	396.8	0.8310	0.0431	0.0221	3.110
540.0	0.009731	427.9	0.8890	0.0464	0.0208	3.097
550.0	0.010149	458.8	0.9459	0.0496	0.0196	3.094
560.0	0.010553	489.8	1.0017	0.0526	0.0186	3.096
570.0	0.010944	520.9	1.0566	0.0556	0.0178	3.104
580.0	0.011324	552.1	1.1108	0.0584	0.0170	3.115
590.0	0.011695	583.4	1.1643	0.0612	0.0163	3.129
600.0	0.012058	614.9	1.2172	0.0639	0.0156	3.146

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 6.5 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001586	-500.9	-1.5125	0.948	0.912	2.089
250.0	0.001611	-479.8	-1.4266	0.877	0.858	2.132
260.0	0.001637	-458.4	-1.3425	0.807	0.805	2.171
270.0	0.001664	-436.5	-1.2602	0.739	0.754	2.211
280.0	0.001693	-414.2	-1.1790	0.674	0.704	2.254
290.0	0.001724	-391.4	-1.0991	0.610	0.656	2.301
300.0	0.001757	-368.1	-1.0202	0.550	0.610	2.352
310.0	0.001793	-344.2	-0.9421	0.493	0.565	2.407
320.0	0.001831	-319.8	-0.8647	0.439	0.522	2.466
330.0	0.001872	-294.8	-0.7877	0.388	0.480	2.529
340.0	0.001918	-269.1	-0.7112	0.340	0.440	2.596
350.0	0.001968	-242.8	-0.6349	0.295	0.402	2.668
360.0	0.002023	-215.7	-0.5586	0.253	0.365	2.745
370.0	0.002086	-187.8	-0.4822	0.214	0.329	2.829
380.0	0.002158	-159.0	-0.4054	0.1778	0.295	2.924
390.0	0.002242	-129.2	-0.3280	0.1443	0.262	3.033
395.0	0.002290	-113.8	-0.2890	0.1286	0.245	3.095
400.0	0.002343	-98.2	-0.2496	0.1137	0.229	3.164
405.0	0.002402	-82.1	-0.2097	0.0995	0.213	3.242
410.0	0.002468	-65.7	-0.1694	0.0860	0.198	3.330
415.0	0.002543	-48.7	-0.1283	0.0734	0.182	3.434
420.0	0.002630	-31.3	-0.0864	0.0616	0.167	3.556
425.0	0.002733	-13.1	-0.0435	0.0508	0.1513	3.703
430.0	0.002857	5.9	0.0009	0.0411	0.1362	3.881
435.0	0.003008	25.8	0.0471	0.0328	0.1214	4.095
440.0	0.003197	46.9	0.0953	0.0260	0.1070	4.335
445.0	0.003435	69.2	0.1457	0.0210	0.0935	4.563
450.0	0.003725	92.5	0.1976	0.0179	0.0813	4.702
455.0	0.004061	116.0	0.2497	0.0166	0.0710	4.688
460.0	0.004424	139.2	0.3003	0.0167	0.0625	4.538
470.0	0.005150	182.5	0.3934	0.0190	0.0503	4.105
480.0	0.005819	221.7	0.4759	0.0227	0.0423	3.749
490.0	0.006420	257.9	0.5506	0.0266	0.0368	3.514
500.0	0.006966	292.3	0.6201	0.0306	0.0328	3.363
510.0	0.007468	325.4	0.6857	0.0344	0.0298	3.267
520.0	0.007936	357.8	0.7485	0.0381	0.0273	3.206
530.0	0.008376	389.7	0.8092	0.0416	0.0254	3.167
540.0	0.008795	421.3	0.8683	0.0450	0.0237	3.145
550.0	0.009196	452.7	0.9259	0.0483	0.0223	3.135
560.0	0.009581	484.1	0.9825	0.0514	0.0211	3.132
570.0	0.009954	515.5	1.0380	0.0545	0.0200	3.135
580.0	0.010316	547.0	1.0927	0.0574	0.0191	3.143
590.0	0.010669	578.6	1.1467	0.0603	0.0183	3.154
600.0	0.011013	610.3	1.2000	0.0631	0.0175	3.167

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 7.0 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001585	-500.4	-1.5137	0.960	0.920	2.088
250.0	0.001609	-479.4	-1.4278	0.889	0.865	2.130
260.0	0.001635	-457.9	-1.3439	0.819	0.812	2.169
270.0	0.001662	-436.1	-1.2616	0.750	0.761	2.208
280.0	0.001691	-413.8	-1.1805	0.684	0.711	2.251
290.0	0.001722	-391.0	-1.1007	0.621	0.662	2.298
300.0	0.001754	-367.7	-1.0219	0.561	0.616	2.348
310.0	0.001789	-343.9	-0.9439	0.503	0.571	2.403
320.0	0.001827	-319.5	-0.8666	0.449	0.528	2.461
330.0	0.001868	-294.6	-0.7899	0.398	0.486	2.523
340.0	0.001912	-269.0	-0.7136	0.350	0.446	2.589
350.0	0.001961	-242.7	-0.6375	0.305	0.408	2.658
360.0	0.002015	-215.7	-0.5615	0.263	0.371	2.733
370.0	0.002076	-188.0	-0.4855	0.224	0.336	2.814
380.0	0.002145	-159.4	-0.4092	0.1879	0.302	2.903
390.0	0.002225	-129.8	-0.3325	0.1545	0.269	3.004
395.0	0.002270	-114.6	-0.2938	0.1389	0.253	3.060
400.0	0.002320	-99.1	-0.2549	0.1240	0.237	3.121
405.0	0.002374	-83.3	-0.2157	0.1098	0.222	3.189
410.0	0.002434	-67.2	-0.1761	0.0964	0.206	3.264
415.0	0.002502	-50.6	-0.1359	0.0838	0.191	3.350
420.0	0.002579	-33.6	-0.0952	0.0720	0.176	3.447
425.0	0.002667	-16.1	-0.0537	0.0611	0.1619	3.559
430.0	0.002770	2.1	-0.0113	0.0513	0.1476	3.688
435.0	0.002891	20.9	0.0323	0.0425	0.1336	3.837
440.0	0.003036	40.5	0.0771	0.0350	0.1200	4.003
445.0	0.003211	61.0	0.1234	0.0290	0.1071	4.174
450.0	0.003420	82.3	0.1709	0.0245	0.0950	4.322
455.0	0.003666	104.1	0.2193	0.0216	0.0841	4.408
460.0	0.003943	126.2	0.2676	0.0201	0.0747	4.405
470.0	0.004548	169.4	0.3604	0.0202	0.0601	4.184
480.0	0.005154	209.7	0.4453	0.0227	0.0501	3.882
490.0	0.005721	247.3	0.5228	0.0260	0.0432	3.638
500.0	0.006243	282.8	0.5945	0.0297	0.0381	3.467
510.0	0.006727	316.9	0.6620	0.0334	0.0343	3.352
520.0	0.007177	350.1	0.7264	0.0370	0.0313	3.275
530.0	0.007602	382.6	0.7883	0.0406	0.0289	3.225
540.0	0.008004	414.7	0.8483	0.0440	0.0269	3.194
550.0	0.008389	446.6	0.9069	0.0473	0.0252	3.176
560.0	0.008758	478.4	0.9641	0.0505	0.0237	3.168
570.0	0.009115	510.2	1.0203	0.0536	0.0225	3.166
580.0	0.009460	541.9	1.0755	0.0566	0.0213	3.170
590.0	0.009797	573.8	1.1299	0.0595	0.0204	3.178
600.0	0.010124	605.8	1.1836	0.0623	0.0195	3.190

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 7.5 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001583	-499.9	-1.5149	0.973	0.929	2.087
250.0	0.001608	-478.9	-1.4291	0.901	0.873	2.129
260.0	0.001633	-457.4	-1.3452	0.830	0.819	2.167
270.0	0.001660	-435.6	-1.2630	0.761	0.767	2.206
280.0	0.001689	-413.3	-1.1820	0.695	0.717	2.249
290.0	0.001719	-390.6	-1.1023	0.631	0.668	2.295
300.0	0.001752	-367.3	-1.0236	0.571	0.622	2.345
310.0	0.001786	-343.6	-0.9457	0.513	0.577	2.399
320.0	0.001823	-319.3	-0.8686	0.459	0.534	2.456
330.0	0.001863	-294.4	-0.7920	0.408	0.492	2.517
340.0	0.001907	-268.8	-0.7159	0.360	0.452	2.581
350.0	0.001955	-242.6	-0.6400	0.315	0.414	2.649
360.0	0.002008	-215.7	-0.5643	0.273	0.378	2.722
370.0	0.002067	-188.1	-0.4887	0.234	0.342	2.799
380.0	0.002133	-159.7	-0.4129	0.1978	0.308	2.884
390.0	0.002210	-130.3	-0.3367	0.1645	0.276	2.978
400.0	0.002299	-100.0	-0.2599	0.1340	0.245	3.085
405.0	0.002349	-84.4	-0.2212	0.1199	0.230	3.145
410.0	0.002405	-68.5	-0.1822	0.1065	0.215	3.211
415.0	0.002467	-52.2	-0.1428	0.0939	0.200	3.284
420.0	0.002536	-35.6	-0.1029	0.0821	0.186	3.364
425.0	0.002614	-18.5	-0.0625	0.0712	0.172	3.454
430.0	0.002702	-1.0	-0.0215	0.0611	0.1578	3.556
435.0	0.002804	17.1	0.0203	0.0521	0.1443	3.668
440.0	0.002922	35.8	0.0630	0.0442	0.1313	3.791
445.0	0.003061	55.1	0.1066	0.0374	0.1189	3.920
450.0	0.003223	75.0	0.1511	0.0320	0.1071	4.043
455.0	0.003410	95.5	0.1964	0.0279	0.0962	4.142
460.0	0.003624	116.4	0.2421	0.0252	0.0863	4.197
465.0	0.003860	137.4	0.2875	0.0236	0.0776	4.196
470.0	0.004113	158.3	0.3322	0.0230	0.0702	4.142
480.0	0.004638	198.8	0.4175	0.0239	0.0584	3.944
490.0	0.005156	237.2	0.4966	0.0264	0.0500	3.729
500.0	0.005647	273.7	0.5702	0.0295	0.0438	3.556
510.0	0.006107	308.6	0.6394	0.0329	0.0392	3.429
520.0	0.006538	342.4	0.7051	0.0364	0.0355	3.341
530.0	0.006945	375.6	0.7682	0.0399	0.0326	3.281
540.0	0.007332	408.2	0.8292	0.0433	0.0302	3.242
550.0	0.007701	440.6	0.8886	0.0466	0.0282	3.217
560.0	0.008055	472.8	0.9465	0.0498	0.0265	3.203
570.0	0.008396	504.9	1.0033	0.0529	0.0250	3.197
580.0	0.008727	536.9	1.0590	0.0559	0.0237	3.198
590.0	0.009048	569.1	1.1139	0.0589	0.0226	3.203
600.0	0.009361	601.3	1.1680	0.0618	0.0216	3.211

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 8.0 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001582	-499.4	-1.5161	0.985	0.937	2.086
250.0	0.001606	-478.4	-1.4303	0.913	0.880	2.127
260.0	0.001632	-457.0	-1.3465	0.841	0.826	2.165
270.0	0.001659	-435.2	-1.2644	0.772	0.774	2.204
280.0	0.001687	-412.9	-1.1835	0.705	0.723	2.246
290.0	0.001717	-390.2	-1.1038	0.642	0.674	2.292
300.0	0.001749	-367.0	-1.0252	0.581	0.628	2.342
310.0	0.001783	-343.2	-0.9475	0.523	0.583	2.395
320.0	0.001820	-319.0	-0.8705	0.469	0.539	2.452
330.0	0.001859	-294.1	-0.7941	0.417	0.498	2.512
340.0	0.001902	-268.6	-0.7182	0.369	0.458	2.575
350.0	0.001949	-242.5	-0.6425	0.325	0.420	2.641
360.0	0.002000	-215.7	-0.5671	0.283	0.384	2.711
370.0	0.002058	-188.2	-0.4918	0.244	0.348	2.786
380.0	0.002122	-159.9	-0.4163	0.208	0.315	2.866
390.0	0.002195	-130.8	-0.3407	0.1743	0.283	2.955
400.0	0.002279	-100.7	-0.2646	0.1439	0.252	3.054
405.0	0.002327	-85.3	-0.2263	0.1298	0.237	3.108
410.0	0.002379	-69.6	-0.1878	0.1164	0.222	3.167
415.0	0.002436	-53.6	-0.1490	0.1038	0.208	3.230
420.0	0.002499	-37.2	-0.1099	0.0919	0.194	3.299
425.0	0.002569	-20.5	-0.0703	0.0809	0.180	3.375
430.0	0.002647	-3.4	-0.0303	0.0708	0.1670	3.457
435.0	0.002736	14.1	0.0102	0.0615	0.1540	3.547
440.0	0.002836	32.1	0.0513	0.0533	0.1415	3.644
445.0	0.002951	50.6	0.0931	0.0461	0.1294	3.745
450.0	0.003083	69.6	0.1356	0.0400	0.1179	3.844
455.0	0.003233	89.1	0.1786	0.0351	0.1071	3.934
460.0	0.003404	109.0	0.2220	0.0314	0.0971	4.002
465.0	0.003593	129.1	0.2656	0.0288	0.0881	4.038
470.0	0.003799	149.3	0.3088	0.0272	0.0801	4.037
480.0	0.004245	189.3	0.3930	0.0264	0.0670	3.937
490.0	0.004706	227.9	0.4726	0.0277	0.0572	3.777
500.0	0.005158	264.9	0.5474	0.0301	0.0499	3.621
510.0	0.005589	300.5	0.6179	0.0331	0.0444	3.494
520.0	0.005999	335.0	0.6848	0.0363	0.0401	3.400
530.0	0.006387	368.7	0.7490	0.0396	0.0366	3.333
540.0	0.006757	401.9	0.8109	0.0429	0.0338	3.287
550.0	0.007110	434.7	0.8711	0.0461	0.0314	3.256
560.0	0.007450	467.2	0.9297	0.0493	0.0294	3.238
570.0	0.007777	499.7	0.9870	0.0525	0.0277	3.228
580.0	0.008094	532.0	1.0433	0.0555	0.0262	3.225
590.0	0.008401	564.4	1.0987	0.0585	0.0249	3.227
600.0	0.008701	596.9	1.1532	0.0614	0.0237	3.233

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 8.5 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001581	-498.9	-1.5173	0.998	0.945	2.084
250.0	0.001605	-477.9	-1.4316	0.924	0.888	2.126
260.0	0.001630	-456.5	-1.3478	0.853	0.833	2.164
270.0	0.001657	-434.7	-1.2657	0.783	0.780	2.202
280.0	0.001685	-412.5	-1.1849	0.716	0.729	2.244
290.0	0.001715	-389.8	-1.1054	0.652	0.680	2.289
300.0	0.001746	-366.6	-1.0269	0.591	0.633	2.338
310.0	0.001780	-342.9	-0.9493	0.533	0.588	2.391
320.0	0.001816	-318.7	-0.8724	0.478	0.545	2.447
330.0	0.001855	-293.9	-0.7962	0.427	0.503	2.506
340.0	0.001897	-268.4	-0.7204	0.379	0.464	2.568
350.0	0.001943	-242.4	-0.6450	0.334	0.426	2.633
360.0	0.001993	-215.7	-0.5698	0.292	0.389	2.701
370.0	0.002049	-188.3	-0.4947	0.253	0.354	2.773
380.0	0.002111	-160.1	-0.4197	0.217	0.321	2.851
390.0	0.002181	-131.2	-0.3446	0.1839	0.289	2.934
400.0	0.002262	-101.4	-0.2691	0.1535	0.259	3.026
405.0	0.002307	-86.1	-0.2311	0.1394	0.244	3.076
410.0	0.002355	-70.5	-0.1930	0.1260	0.230	3.129
415.0	0.002408	-54.7	-0.1547	0.1134	0.216	3.186
420.0	0.002466	-38.6	-0.1162	0.1015	0.202	3.246
425.0	0.002530	-22.2	-0.0774	0.0904	0.189	3.311
430.0	0.002601	-5.5	-0.0382	0.0802	0.1756	3.381
435.0	0.002679	11.7	0.0014	0.0708	0.1629	3.456
440.0	0.002767	29.2	0.0414	0.0623	0.1507	3.535
445.0	0.002866	47.1	0.0818	0.0547	0.1389	3.618
450.0	0.002978	65.4	0.1228	0.0481	0.1276	3.700
455.0	0.003103	84.1	0.1641	0.0426	0.1170	3.777
460.0	0.003243	103.2	0.2058	0.0382	0.1070	3.843
465.0	0.003399	122.5	0.2477	0.0347	0.0979	3.891
470.0	0.003570	142.1	0.2895	0.0323	0.0895	3.915
480.0	0.003946	181.2	0.3718	0.0299	0.0755	3.886
490.0	0.004350	219.6	0.4511	0.0299	0.0646	3.784
500.0	0.004758	256.9	0.5263	0.0315	0.0563	3.658
510.0	0.005158	292.9	0.5976	0.0339	0.0499	3.543
520.0	0.005543	327.9	0.6656	0.0367	0.0448	3.450
530.0	0.005911	362.1	0.7307	0.0398	0.0408	3.379
540.0	0.006264	395.7	0.7934	0.0429	0.0375	3.329
550.0	0.006602	428.9	0.8543	0.0461	0.0348	3.293
560.0	0.006926	461.8	0.9136	0.0492	0.0325	3.271
570.0	0.007240	494.6	0.9715	0.0523	0.0305	3.257
580.0	0.007543	527.2	1.0283	0.0553	0.0288	3.251
590.0	0.007838	559.9	1.0840	0.0583	0.0273	3.250
600.0	0.008125	592.6	1.1389	0.0612	0.0260	3.254

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 9.0 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001579	-498.4	-1.5185	1.010	0.953	2.083
250.0	0.001603	-477.4	-1.4328	0.936	0.895	2.124
260.0	0.001629	-456.0	-1.3491	0.864	0.840	2.162
270.0	0.001655	-434.3	-1.2671	0.794	0.786	2.200
280.0	0.001683	-412.0	-1.1864	0.726	0.735	2.242
290.0	0.001712	-389.4	-1.1069	0.662	0.686	2.287
300.0	0.001744	-366.2	-1.0285	0.601	0.639	2.335
310.0	0.001777	-342.5	-0.9510	0.543	0.594	2.388
320.0	0.001812	-318.4	-0.8743	0.488	0.550	2.443
330.0	0.001851	-293.6	-0.7982	0.437	0.509	2.501
340.0	0.001892	-268.2	-0.7226	0.388	0.469	2.562
350.0	0.001937	-242.3	-0.6473	0.343	0.431	2.625
360.0	0.001986	-215.7	-0.5724	0.301	0.395	2.692
370.0	0.002041	-188.3	-0.4977	0.262	0.360	2.762
380.0	0.002101	-160.3	-0.4230	0.226	0.327	2.836
390.0	0.002169	-131.5	-0.3482	0.1933	0.296	2.916
400.0	0.002245	-101.9	-0.2733	0.1630	0.266	3.002
405.0	0.002288	-86.8	-0.2357	0.1489	0.251	3.048
410.0	0.002334	-71.4	-0.1980	0.1355	0.237	3.097
415.0	0.002384	-55.8	-0.1601	0.1228	0.223	3.148
420.0	0.002438	-39.9	-0.1220	0.1109	0.210	3.202
425.0	0.002496	-23.7	-0.0838	0.0998	0.196	3.260
430.0	0.002561	-7.2	-0.0453	0.0894	0.1835	3.321
435.0	0.002632	9.6	-0.0065	0.0798	0.1712	3.385
440.0	0.002710	26.7	0.0326	0.0711	0.1592	3.452
445.0	0.002797	44.1	0.0721	0.0633	0.1476	3.521
450.0	0.002894	61.9	0.1118	0.0564	0.1366	3.590
455.0	0.003002	80.1	0.1519	0.0504	0.1261	3.657
460.0	0.003121	98.5	0.1923	0.0453	0.1162	3.717
465.0	0.003252	117.3	0.2328	0.0413	0.1070	3.767
470.0	0.003396	136.2	0.2733	0.0381	0.0985	3.802
480.0	0.003716	174.4	0.3537	0.0343	0.0838	3.815
490.0	0.004068	212.4	0.4319	0.0330	0.0720	3.761
500.0	0.004434	249.6	0.5071	0.0336	0.0628	3.670
510.0	0.004800	285.9	0.5789	0.0353	0.0556	3.573
520.0	0.005159	321.2	0.6475	0.0377	0.0498	3.487
530.0	0.005506	355.8	0.7133	0.0404	0.0452	3.418
540.0	0.005840	389.7	0.7768	0.0433	0.0415	3.365
550.0	0.006162	423.3	0.8383	0.0463	0.0383	3.327
560.0	0.006472	456.5	0.8981	0.0493	0.0357	3.301
570.0	0.006772	489.6	0.9566	0.0523	0.0335	3.285
580.0	0.007062	522.5	1.0138	0.0553	0.0315	3.276
590.0	0.007345	555.4	1.0700	0.0583	0.0298	3.273
600.0	0.007619	588.4	1.1253	0.0612	0.0283	3.275

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 9.5 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001578	-497.9	-1.5196	1.022	0.961	2.082
250.0	0.001602	-476.9	-1.4341	0.948	0.902	2.123
260.0	0.001627	-455.5	-1.3504	0.875	0.846	2.160
270.0	0.001653	-433.8	-1.2685	0.804	0.793	2.198
280.0	0.001681	-411.6	-1.1878	0.737	0.741	2.239
290.0	0.001710	-388.9	-1.1084	0.672	0.692	2.284
300.0	0.001741	-365.8	-1.0301	0.610	0.644	2.332
310.0	0.001774	-342.2	-0.9527	0.552	0.599	2.384
320.0	0.001809	-318.0	-0.8761	0.498	0.556	2.439
330.0	0.001847	-293.3	-0.8002	0.446	0.514	2.496
340.0	0.001888	-268.0	-0.7247	0.398	0.475	2.556
350.0	0.001932	-242.1	-0.6497	0.353	0.437	2.618
360.0	0.001980	-215.6	-0.5750	0.311	0.401	2.683
370.0	0.002033	-188.4	-0.5005	0.272	0.366	2.751
380.0	0.002091	-160.5	-0.4261	0.236	0.333	2.823
390.0	0.002156	-131.8	-0.3518	0.203	0.302	2.899
400.0	0.002230	-102.4	-0.2773	0.1723	0.272	2.980
405.0	0.002271	-87.4	-0.2400	0.1581	0.258	3.023
410.0	0.002314	-72.1	-0.2026	0.1447	0.244	3.068
415.0	0.002361	-56.6	-0.1651	0.1321	0.230	3.115
420.0	0.002412	-40.9	-0.1275	0.1201	0.216	3.165
425.0	0.002466	-25.0	-0.0897	0.1089	0.204	3.216
430.0	0.002526	-8.7	-0.0517	0.0984	0.1910	3.270
435.0	0.002591	7.8	-0.0136	0.0887	0.1789	3.327
440.0	0.002662	24.6	0.0248	0.0799	0.1671	3.385
445.0	0.002740	41.7	0.0635	0.0718	0.1557	3.445
450.0	0.002825	59.1	0.1023	0.0646	0.1449	3.505
455.0	0.002920	76.8	0.1414	0.0582	0.1345	3.563
460.0	0.003024	94.8	0.1807	0.0527	0.1247	3.617
465.0	0.003137	113.0	0.2201	0.0481	0.1155	3.665
470.0	0.003261	131.4	0.2595	0.0444	0.1069	3.703
480.0	0.003536	168.7	0.3380	0.0393	0.0918	3.739
490.0	0.003843	206.1	0.4151	0.0369	0.0793	3.720
500.0	0.004169	243.1	0.4897	0.0364	0.0693	3.662
510.0	0.004503	279.4	0.5616	0.0374	0.0613	3.586
520.0	0.004834	314.9	0.6306	0.0392	0.0549	3.512
530.0	0.005159	349.8	0.6969	0.0415	0.0498	3.447
540.0	0.005474	384.0	0.7610	0.0441	0.0455	3.395
550.0	0.005780	417.9	0.8230	0.0469	0.0420	3.357
560.0	0.006076	451.4	0.8834	0.0498	0.0390	3.329
570.0	0.006362	484.8	0.9424	0.0527	0.0365	3.310
580.0	0.006640	518.0	1.0000	0.0556	0.0343	3.299
590.0	0.006911	551.1	1.0566	0.0585	0.0324	3.294
600.0	0.007174	584.3	1.1123	0.0613	0.0307	3.294

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 10.0 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001577	-497.4	-1.5208	1.034	0.968	2.081
250.0	0.001601	-476.4	-1.4353	0.959	0.909	2.122
260.0	0.001626	-455.1	-1.3517	0.886	0.853	2.159
270.0	0.001652	-433.3	-1.2698	0.815	0.799	2.196
280.0	0.001679	-411.2	-1.1892	0.747	0.747	2.237
290.0	0.001708	-388.5	-1.1099	0.682	0.697	2.281
300.0	0.001738	-365.4	-1.0317	0.620	0.650	2.329
310.0	0.001771	-341.8	-0.9544	0.562	0.604	2.381
320.0	0.001806	-317.7	-0.8780	0.507	0.561	2.435
330.0	0.001843	-293.1	-0.8021	0.455	0.519	2.491
340.0	0.001883	-267.8	-0.7268	0.407	0.480	2.550
350.0	0.001926	-242.0	-0.6520	0.362	0.442	2.612
360.0	0.001973	-215.5	-0.5775	0.320	0.406	2.675
370.0	0.002025	-188.4	-0.5032	0.281	0.372	2.741
380.0	0.002082	-160.6	-0.4292	0.245	0.339	2.811
390.0	0.002145	-132.1	-0.3552	0.212	0.308	2.883
400.0	0.002216	-102.8	-0.2812	0.1814	0.278	2.961
405.0	0.002255	-87.9	-0.2441	0.1673	0.264	3.001
410.0	0.002296	-72.8	-0.2070	0.1539	0.250	3.043
415.0	0.002340	-57.4	-0.1698	0.1411	0.236	3.087
420.0	0.002388	-41.9	-0.1326	0.1291	0.223	3.132
425.0	0.002439	-26.1	-0.0952	0.1179	0.210	3.179
430.0	0.002495	-10.0	-0.0577	0.1073	0.1981	3.228
435.0	0.002555	6.3	-0.0201	0.0975	0.1861	3.279
440.0	0.002620	22.8	0.0177	0.0885	0.1745	3.330
445.0	0.002690	39.6	0.0557	0.0802	0.1633	3.383
450.0	0.002768	56.7	0.0938	0.0727	0.1526	3.436
455.0	0.002852	74.0	0.1321	0.0661	0.1424	3.487
460.0	0.002944	91.6	0.1705	0.0602	0.1327	3.536
465.0	0.003044	109.4	0.2090	0.0552	0.1235	3.581
470.0	0.003152	127.4	0.2476	0.0510	0.1149	3.619
480.0	0.003393	163.9	0.3244	0.0448	0.0994	3.666
490.0	0.003662	200.7	0.4002	0.0413	0.0865	3.672
500.0	0.003953	237.3	0.4741	0.0399	0.0758	3.640
510.0	0.004255	273.5	0.5458	0.0400	0.0672	3.585
520.0	0.004559	309.1	0.6149	0.0412	0.0602	3.525
530.0	0.004862	344.1	0.6816	0.0430	0.0544	3.468
540.0	0.005158	378.7	0.7460	0.0453	0.0497	3.419
550.0	0.005448	412.8	0.8086	0.0478	0.0458	3.381
560.0	0.005729	446.5	0.8694	0.0505	0.0425	3.353
570.0	0.006002	480.1	0.9287	0.0533	0.0396	3.333
580.0	0.006268	513.5	0.9868	0.0561	0.0372	3.320
590.0	0.006527	546.9	1.0438	0.0589	0.0351	3.314
600.0	0.006779	580.3	1.0998	0.0617	0.0332	3.312

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 11 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001575	-496.4	-1.5231	1.058	0.984	2.079
250.0	0.001598	-475.4	-1.4377	0.982	0.923	2.119
260.0	0.001622	-454.1	-1.3542	0.908	0.866	2.156
270.0	0.001648	-432.4	-1.2725	0.836	0.811	2.193
280.0	0.001675	-410.3	-1.1920	0.767	0.758	2.233
290.0	0.001704	-387.7	-1.1129	0.702	0.708	2.277
300.0	0.001734	-364.6	-1.0349	0.639	0.660	2.324
310.0	0.001765	-341.1	-0.9578	0.581	0.615	2.374
320.0	0.001799	-317.1	-0.8815	0.526	0.571	2.427
330.0	0.001835	-292.5	-0.8060	0.474	0.530	2.482
340.0	0.001874	-267.3	-0.7310	0.425	0.490	2.540
350.0	0.001916	-241.6	-0.6565	0.380	0.452	2.599
360.0	0.001961	-215.3	-0.5823	0.338	0.416	2.660
370.0	0.002011	-188.3	-0.5086	0.299	0.382	2.723
380.0	0.002065	-160.7	-0.4350	0.263	0.350	2.788
390.0	0.002124	-132.5	-0.3617	0.230	0.319	2.856
400.0	0.002190	-103.5	-0.2885	0.199	0.290	2.927
410.0	0.002263	-73.9	-0.2152	0.1716	0.262	3.001
420.0	0.002346	-43.4	-0.1419	0.1468	0.236	3.079
430.0	0.002441	-12.2	-0.0685	0.1246	0.211	3.161
440.0	0.002549	19.9	0.0052	0.1053	0.1882	3.245
450.0	0.002674	52.8	0.0791	0.0889	0.1668	3.331
460.0	0.002819	86.6	0.1533	0.0753	0.1472	3.414
470.0	0.002986	121.2	0.2276	0.0646	0.1294	3.488
480.0	0.003177	156.4	0.3017	0.0567	0.1137	3.542
490.0	0.003391	192.0	0.3752	0.0514	0.1001	3.572
500.0	0.003624	227.8	0.4475	0.0482	0.0885	3.575
510.0	0.003872	263.5	0.5182	0.0468	0.0788	3.556
520.0	0.004128	299.0	0.5870	0.0466	0.0707	3.523
530.0	0.004388	334.1	0.6539	0.0474	0.0640	3.485
540.0	0.004648	368.9	0.7188	0.0489	0.0583	3.448
550.0	0.004905	403.3	0.7819	0.0507	0.0536	3.416
560.0	0.005157	437.4	0.8434	0.0529	0.0496	3.390
570.0	0.005405	471.4	0.9034	0.0553	0.0462	3.370
580.0	0.005647	505.2	0.9621	0.0578	0.0432	3.357
590.0	0.005883	538.9	1.0197	0.0604	0.0406	3.348
600.0	0.006115	572.6	1.0763	0.0630	0.0384	3.345

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 12 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001572	-495.3	-1.5254	1.082	0.998	2.077
250.0	0.001595	-474.4	-1.4401	1.004	0.937	2.117
260.0	0.001620	-453.1	-1.3567	0.929	0.878	2.153
270.0	0.001645	-431.5	-1.2751	0.856	0.822	2.189
280.0	0.001671	-409.4	-1.1948	0.787	0.769	2.229
290.0	0.001699	-386.8	-1.1158	0.721	0.719	2.272
300.0	0.001729	-363.8	-1.0379	0.659	0.671	2.318
310.0	0.001760	-340.4	-0.9611	0.600	0.625	2.368
320.0	0.001793	-316.4	-0.8850	0.544	0.581	2.420
330.0	0.001828	-291.9	-0.8097	0.492	0.539	2.474
340.0	0.001866	-266.8	-0.7350	0.443	0.500	2.530
350.0	0.001907	-241.2	-0.6608	0.398	0.462	2.587
360.0	0.001950	-215.0	-0.5870	0.356	0.426	2.646
370.0	0.001997	-188.2	-0.5136	0.317	0.392	2.707
380.0	0.002049	-160.8	-0.4406	0.280	0.360	2.769
390.0	0.002105	-132.7	-0.3678	0.247	0.330	2.833
400.0	0.002166	-104.1	-0.2952	0.217	0.301	2.899
410.0	0.002235	-74.7	-0.2228	0.1889	0.273	2.966
420.0	0.002311	-44.6	-0.1504	0.1639	0.248	3.037
430.0	0.002396	-13.9	-0.0781	0.1415	0.223	3.109
440.0	0.002492	17.6	-0.0057	0.1218	0.201	3.182
450.0	0.002601	49.8	0.0667	0.1047	0.1796	3.256
460.0	0.002725	82.8	0.1391	0.0904	0.1602	3.327
470.0	0.002865	116.5	0.2114	0.0786	0.1426	3.392
480.0	0.003023	150.7	0.2834	0.0694	0.1267	3.446
490.0	0.003198	185.4	0.3550	0.0626	0.1127	3.485
500.0	0.003390	220.4	0.4257	0.0579	0.1005	3.505
510.0	0.003596	255.6	0.4952	0.0550	0.0900	3.508
520.0	0.003812	290.7	0.5633	0.0536	0.0811	3.497
530.0	0.004035	325.6	0.6299	0.0533	0.0735	3.478
540.0	0.004260	360.4	0.6948	0.0538	0.0671	3.455
550.0	0.004487	394.9	0.7581	0.0549	0.0616	3.432
560.0	0.004712	429.3	0.8199	0.0565	0.0570	3.412
570.0	0.004935	463.5	0.8804	0.0584	0.0530	3.395
580.0	0.005154	497.6	0.9396	0.0605	0.0495	3.383
590.0	0.005370	531.6	0.9977	0.0628	0.0464	3.375
600.0	0.005582	565.6	1.0547	0.0651	0.0438	3.371

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 13 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001570	-494.3	-1.5277	1.106	1.013	2.075
250.0	0.001593	-473.4	-1.4425	1.027	0.950	2.114
260.0	0.001617	-452.1	-1.3592	0.950	0.890	2.150
270.0	0.001642	-430.5	-1.2777	0.877	0.834	2.186
280.0	0.001668	-408.5	-1.1975	0.807	0.780	2.225
290.0	0.001695	-386.0	-1.1187	0.740	0.729	2.268
300.0	0.001724	-363.0	-1.0410	0.677	0.681	2.313
310.0	0.001755	-339.6	-0.9643	0.618	0.635	2.362
320.0	0.001787	-315.7	-0.8884	0.562	0.591	2.413
330.0	0.001822	-291.2	-0.8133	0.510	0.549	2.466
340.0	0.001858	-266.3	-0.7388	0.461	0.509	2.521
350.0	0.001897	-240.8	-0.6649	0.416	0.472	2.577
360.0	0.001939	-214.7	-0.5915	0.373	0.436	2.634
370.0	0.001985	-188.0	-0.5185	0.334	0.402	2.693
380.0	0.002034	-160.7	-0.4459	0.298	0.370	2.752
390.0	0.002087	-132.9	-0.3736	0.264	0.340	2.813
400.0	0.002145	-104.4	-0.3016	0.234	0.311	2.874
410.0	0.002209	-75.3	-0.2298	0.206	0.284	2.938
420.0	0.002279	-45.6	-0.1582	0.1805	0.258	3.002
430.0	0.002357	-15.2	-0.0868	0.1579	0.234	3.067
440.0	0.002444	15.8	-0.0154	0.1378	0.212	3.133
450.0	0.002541	47.5	0.0557	0.1203	0.191	3.198
460.0	0.002649	79.9	0.1268	0.1052	0.1721	3.261
470.0	0.002770	112.8	0.1976	0.0927	0.1546	3.320
480.0	0.002905	146.3	0.2681	0.0825	0.1387	3.372
490.0	0.003054	180.3	0.3381	0.0745	0.1244	3.413
500.0	0.003216	214.6	0.4074	0.0686	0.1118	3.441
510.0	0.003390	249.2	0.4758	0.0644	0.1008	3.457
520.0	0.003574	283.9	0.5431	0.0618	0.0912	3.462
530.0	0.003765	318.5	0.6091	0.0604	0.0830	3.457
540.0	0.003962	353.2	0.6737	0.0599	0.0759	3.447
550.0	0.004161	387.7	0.7370	0.0602	0.0697	3.434
560.0	0.004361	422.1	0.7990	0.0611	0.0645	3.421
570.0	0.004561	456.4	0.8596	0.0624	0.0599	3.410
580.0	0.004759	490.7	0.9191	0.0641	0.0559	3.401
590.0	0.004956	524.9	0.9775	0.0659	0.0524	3.395
600.0	0.005149	559.1	1.0349	0.0679	0.0493	3.392

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 14 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001568	-493.3	-1.5300	1.129	1.027	2.073
250.0	0.001590	-472.4	-1.4448	1.049	0.963	2.112
260.0	0.001614	-451.2	-1.3616	0.971	0.902	2.147
270.0	0.001639	-429.6	-1.2802	0.897	0.845	2.183
280.0	0.001664	-407.5	-1.2002	0.826	0.791	2.221
290.0	0.001691	-385.1	-1.1215	0.759	0.739	2.263
300.0	0.001720	-362.2	-1.0439	0.696	0.690	2.308
310.0	0.001750	-338.8	-0.9674	0.636	0.644	2.356
320.0	0.001781	-315.0	-0.8918	0.580	0.600	2.407
330.0	0.001815	-290.6	-0.8169	0.528	0.558	2.459
340.0	0.001851	-265.7	-0.7426	0.479	0.518	2.512
350.0	0.001889	-240.3	-0.6690	0.433	0.481	2.567
360.0	0.001929	-214.3	-0.5958	0.390	0.445	2.623
370.0	0.001973	-187.7	-0.5232	0.351	0.411	2.680
380.0	0.002020	-160.6	-0.4509	0.315	0.379	2.737
390.0	0.002071	-133.0	-0.3791	0.281	0.349	2.795
400.0	0.002126	-104.7	-0.3075	0.250	0.321	2.853
410.0	0.002186	-75.8	-0.2363	0.222	0.294	2.913
420.0	0.002251	-46.4	-0.1654	0.197	0.268	2.973
430.0	0.002324	-16.3	-0.0947	0.1739	0.245	3.033
440.0	0.002403	14.4	-0.0242	0.1535	0.223	3.093
450.0	0.002490	45.7	0.0460	0.1355	0.202	3.153
460.0	0.002587	77.5	0.1159	0.1200	0.1831	3.210
470.0	0.002694	109.9	0.1856	0.1067	0.1656	3.264
480.0	0.002812	142.9	0.2549	0.0957	0.1497	3.313
490.0	0.002940	176.3	0.3237	0.0867	0.1353	3.354
500.0	0.003080	210.0	0.3918	0.0797	0.1224	3.387
510.0	0.003230	244.1	0.4592	0.0745	0.1110	3.410
520.0	0.003389	278.3	0.5256	0.0708	0.1009	3.424
530.0	0.003555	312.7	0.5910	0.0684	0.0921	3.430
540.0	0.003727	347.1	0.6553	0.0670	0.0844	3.430
550.0	0.003903	381.4	0.7183	0.0665	0.0778	3.426
560.0	0.004081	415.8	0.7802	0.0667	0.0719	3.421
570.0	0.004260	450.2	0.8409	0.0673	0.0669	3.415
580.0	0.004439	484.5	0.9005	0.0684	0.0624	3.410
590.0	0.004617	518.8	0.9591	0.0698	0.0585	3.407
600.0	0.004794	553.2	1.0167	0.0715	0.0550	3.406

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 15 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001565	-492.3	-1.5322	1.152	1.040	2.071
250.0	0.001588	-471.4	-1.4471	1.070	0.975	2.110
260.0	0.001611	-450.2	-1.3640	0.992	0.914	2.144
270.0	0.001636	-428.6	-1.2828	0.917	0.856	2.180
280.0	0.001661	-406.6	-1.2028	0.846	0.801	2.218
290.0	0.001688	-384.2	-1.1242	0.778	0.749	2.259
300.0	0.001716	-361.3	-1.0469	0.714	0.700	2.304
310.0	0.001745	-338.0	-0.9705	0.654	0.653	2.351
320.0	0.001776	-314.2	-0.8950	0.598	0.609	2.401
330.0	0.001809	-289.9	-0.8203	0.545	0.567	2.452
340.0	0.001844	-265.1	-0.7463	0.496	0.527	2.505
350.0	0.001880	-239.8	-0.6729	0.450	0.490	2.558
360.0	0.001920	-213.9	-0.6000	0.407	0.454	2.613
370.0	0.001962	-187.4	-0.5277	0.368	0.420	2.668
380.0	0.002007	-160.5	-0.4558	0.331	0.388	2.723
390.0	0.002056	-132.9	-0.3843	0.298	0.358	2.779
400.0	0.002108	-104.8	-0.3132	0.267	0.330	2.835
410.0	0.002165	-76.2	-0.2425	0.238	0.303	2.891
420.0	0.002226	-46.9	-0.1721	0.213	0.278	2.948
430.0	0.002293	-17.1	-0.1020	0.1896	0.255	3.004
440.0	0.002367	13.2	-0.0323	0.1689	0.233	3.060
450.0	0.002447	44.1	0.0371	0.1505	0.212	3.115
460.0	0.002534	75.6	0.1062	0.1345	0.1934	3.168
470.0	0.002630	107.6	0.1749	0.1206	0.1760	3.219
480.0	0.002735	140.1	0.2432	0.1089	0.1600	3.265
490.0	0.002848	173.0	0.3110	0.0991	0.1455	3.306
500.0	0.002971	206.3	0.3782	0.0913	0.1324	3.340
510.0	0.003102	239.9	0.4447	0.0851	0.1206	3.368
520.0	0.003241	273.7	0.5104	0.0804	0.1102	3.388
530.0	0.003387	307.7	0.5751	0.0771	0.1010	3.401
540.0	0.003539	341.9	0.6389	0.0749	0.0928	3.409
550.0	0.003695	376.1	0.7016	0.0735	0.0857	3.412
560.0	0.003854	410.4	0.7633	0.0730	0.0794	3.414
570.0	0.004015	444.7	0.8240	0.0730	0.0738	3.413
580.0	0.004176	479.0	0.8836	0.0735	0.0689	3.413
590.0	0.004338	513.4	0.9423	0.0744	0.0646	3.413
600.0	0.004499	547.8	1.0000	0.0756	0.0607	3.415

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 16 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001563	-491.2	-1.5344	1.174	1.054	2.069
250.0	0.001585	-470.4	-1.4494	1.092	0.987	2.107
260.0	0.001609	-449.2	-1.3664	1.013	0.925	2.142
270.0	0.001633	-427.7	-1.2852	0.937	0.866	2.177
280.0	0.001658	-405.7	-1.2054	0.865	0.811	2.215
290.0	0.001684	-383.3	-1.1270	0.797	0.758	2.255
300.0	0.001711	-360.5	-1.0497	0.732	0.709	2.299
310.0	0.001740	-337.2	-0.9735	0.672	0.662	2.346
320.0	0.001771	-313.5	-0.8982	0.615	0.618	2.395
330.0	0.001803	-289.2	-0.8237	0.562	0.576	2.446
340.0	0.001837	-264.5	-0.7499	0.513	0.536	2.497
350.0	0.001873	-239.2	-0.6767	0.467	0.498	2.550
360.0	0.001911	-213.4	-0.6041	0.424	0.462	2.603
370.0	0.001952	-187.1	-0.5320	0.384	0.429	2.657
380.0	0.001995	-160.2	-0.4604	0.347	0.397	2.711
390.0	0.002042	-132.8	-0.3893	0.314	0.367	2.765
400.0	0.002092	-104.9	-0.3186	0.283	0.339	2.819
410.0	0.002145	-76.4	-0.2483	0.254	0.312	2.873
420.0	0.002203	-47.4	-0.1784	0.228	0.287	2.926
430.0	0.002266	-17.8	-0.1089	0.205	0.264	2.980
440.0	0.002334	12.3	-0.0398	0.1840	0.242	3.033
450.0	0.002408	42.9	0.0290	0.1652	0.222	3.084
460.0	0.002489	74.1	0.0974	0.1487	0.203	3.134
470.0	0.002576	105.7	0.1653	0.1344	0.1856	3.182
480.0	0.002670	137.8	0.2328	0.1220	0.1696	3.226
490.0	0.002772	170.3	0.2998	0.1116	0.1550	3.266
500.0	0.002881	203.2	0.3662	0.1030	0.1418	3.301
510.0	0.002998	236.4	0.4319	0.0960	0.1298	3.331
520.0	0.003121	269.9	0.4969	0.0905	0.1191	3.355
530.0	0.003251	303.6	0.5611	0.0863	0.1095	3.373
540.0	0.003385	337.5	0.6243	0.0833	0.1009	3.386
550.0	0.003524	371.5	0.6867	0.0812	0.0934	3.396
560.0	0.003667	405.7	0.7481	0.0799	0.0867	3.403
570.0	0.003812	439.9	0.8086	0.0793	0.0807	3.407
580.0	0.003958	474.2	0.8682	0.0792	0.0754	3.411
590.0	0.004105	508.6	0.9269	0.0796	0.0707	3.415
600.0	0.004252	543.0	0.9846	0.0804	0.0665	3.419

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 18 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001559	-489.1	-1.5387	1.219	1.079	2.065
250.0	0.001581	-468.3	-1.4539	1.134	1.011	2.103
260.0	0.001603	-447.2	-1.3711	1.053	0.946	2.137
270.0	0.001627	-425.7	-1.2901	0.976	0.886	2.171
280.0	0.001651	-403.8	-1.2105	0.903	0.830	2.208
290.0	0.001677	-381.5	-1.1323	0.833	0.777	2.248
300.0	0.001703	-358.7	-1.0553	0.768	0.727	2.291
310.0	0.001731	-335.6	-0.9794	0.707	0.679	2.337
320.0	0.001760	-311.9	-0.9044	0.650	0.634	2.385
330.0	0.001791	-287.8	-0.8302	0.596	0.592	2.434
340.0	0.001824	-263.2	-0.7568	0.546	0.552	2.484
350.0	0.001858	-238.0	-0.6840	0.500	0.514	2.535
360.0	0.001894	-212.4	-0.6118	0.456	0.479	2.586
370.0	0.001932	-186.3	-0.5403	0.416	0.445	2.638
380.0	0.001973	-159.6	-0.4692	0.379	0.413	2.689
390.0	0.002016	-132.4	-0.3987	0.345	0.383	2.740
400.0	0.002062	-104.8	-0.3287	0.314	0.355	2.791
410.0	0.002111	-76.6	-0.2591	0.285	0.329	2.841
420.0	0.002163	-47.9	-0.1900	0.259	0.304	2.891
430.0	0.002219	-18.7	-0.1214	0.235	0.281	2.940
440.0	0.002279	11.0	-0.0533	0.213	0.260	2.988
450.0	0.002344	41.1	0.0144	0.1940	0.239	3.035
460.0	0.002413	71.8	0.0817	0.1767	0.221	3.081
470.0	0.002487	102.8	0.1484	0.1615	0.203	3.124
480.0	0.002566	134.3	0.2147	0.1481	0.187	3.166
490.0	0.002650	166.2	0.2804	0.1366	0.173	3.204
500.0	0.002740	198.5	0.3455	0.1267	0.159	3.239
510.0	0.002835	231.1	0.4100	0.1184	0.1468	3.271
520.0	0.002935	264.0	0.4739	0.1115	0.1356	3.299
530.0	0.003040	297.2	0.5370	0.1059	0.1255	3.323
540.0	0.003149	330.6	0.5994	0.1014	0.1163	3.343
550.0	0.003262	364.3	0.6611	0.0979	0.1081	3.361
560.0	0.003379	398.1	0.7219	0.0953	0.1007	3.376
570.0	0.003497	432.1	0.7820	0.0934	0.0941	3.388
580.0	0.003618	466.2	0.8412	0.0922	0.0881	3.399
590.0	0.003741	500.5	0.8997	0.0915	0.0827	3.409
600.0	0.003864	534.9	0.9575	0.0913	0.0779	3.419

Table A2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 20 MPa

T Deg K	V m3/kg	H kJ/kg	S kJ/(kg.K)	DP/DD	DP/DT	CP kJ/(kg.K)
240.0	0.001555	-487.1	-1.5430	1.263	1.104	2.062
250.0	0.001576	-466.3	-1.4583	1.176	1.033	2.099
260.0	0.001599	-445.2	-1.3757	1.093	0.967	2.133
270.0	0.001621	-423.8	-1.2949	1.014	0.906	2.166
280.0	0.001645	-401.9	-1.2155	0.940	0.848	2.202
290.0	0.001670	-379.6	-1.1375	0.869	0.794	2.242
300.0	0.001696	-357.0	-1.0607	0.803	0.743	2.284
310.0	0.001723	-333.9	-0.9851	0.741	0.695	2.329
320.0	0.001751	-310.3	-0.9104	0.683	0.650	2.375
330.0	0.001781	-286.3	-0.8365	0.629	0.608	2.423
340.0	0.001812	-261.8	-0.7634	0.579	0.567	2.472
350.0	0.001844	-236.8	-0.6910	0.532	0.530	2.522
360.0	0.001878	-211.3	-0.6192	0.488	0.494	2.572
370.0	0.001914	-185.3	-0.5480	0.448	0.460	2.621
380.0	0.001953	-158.8	-0.4775	0.410	0.429	2.671
390.0	0.001993	-131.8	-0.4074	0.376	0.399	2.720
400.0	0.002035	-104.4	-0.3380	0.344	0.371	2.768
410.0	0.002081	-76.4	-0.2690	0.315	0.345	2.816
420.0	0.002128	-48.0	-0.2006	0.288	0.320	2.863
430.0	0.002179	-19.1	-0.1327	0.264	0.297	2.909
440.0	0.002233	10.2	-0.0653	0.242	0.275	2.954
450.0	0.002290	40.0	0.0016	0.222	0.255	2.998
460.0	0.002351	70.3	0.0680	0.204	0.237	3.041
470.0	0.002415	100.9	0.1339	0.188	0.219	3.082
480.0	0.002484	132.0	0.1992	0.174	0.203	3.121
490.0	0.002556	163.4	0.2639	0.161	0.188	3.158
500.0	0.002632	195.2	0.3281	0.150	0.175	3.193
510.0	0.002713	227.3	0.3917	0.1410	0.1622	3.225
520.0	0.002797	259.8	0.4547	0.1330	0.1507	3.255
530.0	0.002884	292.5	0.5170	0.1261	0.1402	3.282
540.0	0.002976	325.6	0.5787	0.1205	0.1307	3.306
550.0	0.003070	358.8	0.6396	0.1158	0.1220	3.328
560.0	0.003167	392.4	0.6999	0.1120	0.1141	3.348
570.0	0.003266	426.1	0.7595	0.1090	0.1069	3.365
580.0	0.003368	460.0	0.8184	0.1067	0.1004	3.382
590.0	0.003471	494.1	0.8767	0.1050	0.0945	3.397
600.0	0.003575	528.4	0.9342	0.1037	0.0891	3.411

APPENDIX B.

Tables of Values for the Thermodynamic Properties of the 0.1 Mole Fraction Isopentane in Isobutane Mixture in British Units

Table B1 presents properties for both the dew-points and the bubble-points and at increments of both temperature and pressure. Also shown are the concentrations and thermodynamic properties of the coexisting phase.

Table B2 presents properties along isobars at increments of temperature from the compressed liquid through the superheated vapor. At the bubble-points and dew-points the concentrations and values for the thermodynamic properties of the coexisting phase are also shown.

The intervals for both of these sets of tables are chosen such that for most purposes a linear interpolation between the values presented will give values for the thermodynamic properties to within the uncertainty of the calculated values. In order to facilitate smoother interpolations, the values of the properties presented here have from one half to one more significant figure than would be justified by the uncertainty of these calculated values.

TABLE B1. THERMODYNAMIC PROPERTIES ON THE VAPOR-LIQUID PHASE BOUNDARY

THE DEW POINT AT INCREMENTS OF TEMPERATURE

	LIQUID, X = 0.1000				------ COEXISTING LIQUID ------			
T	P	V	H	S	X	V	H	S
DEG F	PSIA	FT3 LB	BTU LB	BTU/LB-F		FT3 LB	BTU/LB	BTU/LB-F
40.0	2.779	26.927	-57.4	0.0334	0.3982	0.0245	-241.3	-0.3796
-30.0	3.750	20.369	-54.2	0.0310	0.3819	0.0248	-235.6	-0.3675
-20.0	4.979	15.647	-51.1	0.0290	0.3664	0.0250	-229.9	-0.3556
-10.0	6.510	12.190	-47.9	0.0274	0.3517	0.0253	-224.1	-0.3438
0.0	8.393	9.621	-44.6	0.0262	0.3378	0.0256	-218.3	-0.3321
10.0	10.682	7.683	-41.4	0.0253	0.3246	0.0259	-212.5	-0.3206
20.0	13.433	6.202	-38.1	0.0248	0.3122	0.0261	-206.6	-0.3092
24.06	14.696	5.702	-36.8	0.0246	0.3074	0.0263	-204.2	-0.3046
30.0	16.708	5.0567	-34.9	0.0245	0.3005	0.0264	-200.7	-0.2980
40.0	20.57	4.1599	-31.6	0.0246	0.2893	0.0267	-194.7	-0.2867
50.0	25.08	3.4506	-28.3	0.0248	0.2788	0.0271	-188.6	-0.2755
60.0	30.32	2.8838	-25.0	0.0253	0.2688	0.0274	-182.5	-0.2645
70.0	36.35	2.4268	-21.7	0.0260	0.2593	0.0277	-176.3	-0.2535
80.0	43.24	2.0551	-18.4	0.0268	0.2503	0.0281	-170.1	-0.2426
90.0	51.08	1.7503	-15.1	0.0278	0.2417	0.0285	-163.8	-0.2318
100.0	59.94	1.4986	-11.8	0.0288	0.2335	0.0289	-157.4	-0.2211
110.0	69.91	1.2891	-8.6	0.0300	0.2258	0.0293	-151.0	-0.2104
120.0	81.05	1.1137	-5.4	0.0313	0.2183	0.0297	-144.5	-0.1997
130.0	93.46	0.9659	-2.2	0.0326	0.2113	0.0302	-137.9	-0.1891
140.0	107.22	0.8405	0.9	0.0340	0.2045	0.0307	-131.2	-0.1785
150.0	122.41	0.7337	4.0	0.0354	0.1981	0.0312	-124.4	-0.1679
160.0	139.13	0.6420	7.0	0.0369	0.1919	0.0318	-117.5	-0.1573
170.0	157.46	0.5631	9.9	0.0383	0.1860	0.0324	-110.5	-0.1467
180.0	177.50	0.4946	12.8	0.0397	0.1802	0.0330	-103.4	-0.1361
190.0	199.34	0.4350	15.5	0.0411	0.1747	0.0337	-96.1	-0.1254
200.0	223.08	0.3828	18.2	0.0424	0.1694	0.0345	-88.7	-0.1146
210.0	248.8	0.3369	20.7	0.0435	0.1642	0.0354	-81.1	-0.1038
220.0	276.7	0.2962	23.0	0.0445	0.1590	0.0364	-73.3	-0.0929
230.0	306.8	0.2599	25.0	0.0452	0.1539	0.0375	-65.2	-0.0818
240.0	339.4	0.2272	26.8	0.0457	0.1487	0.0388	-56.8	-0.0704
250.0	374.4	0.1974	28.1	0.0456	0.1433	0.0404	-48.1	-0.0588
260.0	412.3	0.1697	28.8	0.0447	0.1375	0.0424	-38.8	-0.0465
270.0	453.4	0.1433	28.5	0.0426	0.1309	0.0451	-28.6	-0.0334
275.0	475.2	0.1300	27.6	0.0407	0.1271	0.0470	-22.9	-0.0262
280.0	498.1	0.1160	26.0	0.0377	0.1225	0.0495	-16.6	-0.0182

TABLE B1. THERMODYNAMIC PROPERTIES ON THE VAPOR-LIQUID PHASE BOUNDARY

THE BUBBLE POINT AT INCREMENTS OF TEMPERATURE

	LIQUID, X = 0.1000				------ COEXISTING VAPOR ------			
T	P	V	H	S	X	V	H	S
DEG F	PSIA	FT3 LB	BTU/LB	BTU/LB-F		FT3 LB	BTU/LB	BTU/LB-F
-40.0	3.820	0.02543	-224.4	-0.3721	0.0184	19.919	-52.1	0.0259
-30.0	5.032	0.02566	-219.4	-0.3603	0.0196	15.424	-49.0	0.0240
-20.0	6.534	0.02590	-214.3	-0.3487	0.0209	12.104	-45.9	0.0226
-10.0	8.373	0.02614	-209.2	-0.3373	0.0222	9.616	-42.8	0.0215
0.0	10.596	0.02639	-204.1	-0.3259	0.0235	7.725	-39.7	0.0208
10.0	13.258	0.02665	-198.8	-0.3147	0.0248	6.270	-36.5	0.0204
14.76	14.696	0.02678	-196.3	-0.3094	0.0254	5.696	-35.0	0.0203
20.0	16.415	0.02692	-193.5	-0.3036	0.0261	5.1374	-33.4	0.0202
30.0	20.12	0.02720	-188.2	-0.2926	0.0275	4.2458	-30.2	0.0203
40.0	24.45	0.02749	-182.8	-0.2817	0.0289	3.5367	-27.1	0.0207
50.0	29.45	0.02780	-177.3	-0.2708	0.0304	2.9674	-23.9	0.0212
60.0	35.19	0.02811	-171.7	-0.2601	0.0318	2.5063	-20.7	0.0219
70.0	41.75	0.02845	-166.0	-0.2493	0.0333	2.1297	-17.6	0.0228
80.0	49.19	0.02879	-160.3	-0.2387	0.0348	1.8197	-14.4	0.0238
90.0	57.59	0.02916	-154.5	-0.2281	0.0364	1.5627	-11.3	0.0249
100.0	67.01	0.02954	-148.5	-0.2175	0.0380	1.3482	-8.2	0.0262
110.0	77.54	0.02995	-142.5	-0.2070	0.0397	1.1679	-5.1	0.0275
120.0	89.25	0.03038	-136.4	-0.1965	0.0413	1.0156	-2.0	0.0289
130.0	102.22	0.03083	-130.2	-0.1860	0.0430	0.8860	1.0	0.0303
140.0	116.53	0.03132	-123.9	-0.1756	0.0448	0.7753	3.9	0.0318
150.0	132.25	0.03184	-117.5	-0.1651	0.0466	0.6801	6.9	0.0333
160.0	149.49	0.03240	-110.9	-0.1546	0.0485	0.5980	9.7	0.0348
170.0	168.31	0.03301	-104.3	-0.1441	0.0504	0.5266	12.5	0.0363
180.0	188.80	0.03366	-97.4	-0.1335	0.0523	0.4644	15.1	0.0378
190.0	211.06	0.03438	-90.5	-0.1230	0.0544	0.4099	17.7	0.0391
200.0	235.18	0.03518	-83.3	-0.1123	0.0565	0.3618	20.1	0.0404
210.0	261.25	0.03607	-76.0	-0.1015	0.0587	0.3193	22.4	0.0416
220.0	289.36	0.03707	-68.5	-0.0906	0.0610	0.2814	24.5	0.0426
230.0	319.63	0.03823	-60.7	-0.0796	0.0635	0.2473	26.3	0.0433
240.0	352.16	0.03959	-52.6	-0.0683	0.0661	0.2166	27.8	0.0437
260.0	424.50	0.04335	-35.1	-0.0444	0.0725	0.1620	29.1	0.0425
270.0	464.54	0.04628	-25.1	-0.0311	0.0767	0.1367	28.3	0.0402
275.0	485.56	0.04831	-19.6	-0.0239	0.0793	0.1238	27.1	0.0381
280.0	507.22	0.05109	-13.4	-0.0157	0.0827	0.1103	25.0	0.0349

TABLE B1. THERMODYNAMIC PROPERTIES ON THE VAPOR LIQUID PHASE BOUNDARY

THE DEW POINT AT INCREMENTS OF PRESSURE

P	VAPOR, X = 0.1000 T	V	H	S	X	COEXISTING LIQUID V	H	S
PSIA	DEG F	FT3 LB	BTU/LB	BTU LB-F		FT3 LB	BTU/LB	BTU/LB-F
4.0	-27.77	19.182	-53.5	0.0305	0.3783	0.02482	-234.3	-0.3649
5.0	-19.84	15.585	-51.0	0.0289	0.3661	0.02503	-229.8	-0.3554
6.0	-13.10	13.152	-48.8	0.0278	0.3561	0.02521	-225.9	-0.3474
8.0	-1.93	10.061	-45.3	0.0264	0.3404	0 02551	-219.5	-0.3344
10.0	7.21	8.171	-42.3	0.0255	0.3282	0.02577	-214.1	-0.3238
14.696	24.06	5.702	-36.8	0.0246	0.3074	0.02626	-204.2	-0.3046
20.0	38.62	4.271	-32.0	0.0245	0.2908	0.02670	-195.5	-0.2882
25.0	49.83	3.461	-28.3	0.0248	0.2790	0.02706	-188.7	-0.2757
30.0	59.43	2.913	-25.1	0.0253	0.2694	0.02738	-182.8	-0.2651
35.0	67.88	2.516	-22.4	0.0258	0.2613	0.02767	-177.6	-0.2558
40.0	75.46	2.215	-19.9	0.0264	0.2543	0.02794	-172.9	-0.2476
50.0	88.69	1.787	-15.5	0.0276	0.2428	0.02843	-164.6	-0.2332
60.0	100.06	1.497	-11.8	0.0289	0.2335	0.02887	-157.4	-0.2210
70.0	110.09	1.2874	-8.6	0.0300	0.2257	0.02929	-150.9	-0.2103
80.0	119.10	1.1283	-5.7	0.0312	0.2190	0.02968	-145.1	-0.2007
100.0	134.88	0.9022	-0.7	0.0333	0.2079	0.03042	-134.6	-0.1839
120.0	148.47	0.7489	3.5	0.0352	0.1990	0.03111	-125.5	-0.1695
140.0	160.49	0.6378	7.1	0.0370	0.1916	0.03178	-117.2	-0.1568
160.0	171.32	0.5535	10.3	0.0385	0.1852	0.03244	-109.6	-0.1453
180.0	181.19	0.4871	13.1	0.0399	0.1796	0.03309	-102.5	-0.1348
200.0	190.29	0.4334	15.6	0.0411	0.1746	0.03375	-95.9	-0.1251
220.0	198.75	0.3890	17.9	0.0422	0.1701	0.03440	-89.6	-0.1160
240.0	206.66	0.3516	19.8	0.0431	0.1659	0.03508	-83.6	-0.1074
260.0	214.10	0.3196	21.6	0.0439	0.1620	0.03577	-77.9	-0.0994
280.0	221.13	0.2919	23.2	0.0446	0.1584	0.03648	-72.4	-0.0916
300.0	227.80	0.2675	24.6	0.0451	0.1550	0.03722	-67.0	-0.0842
320.0	234.14	0.2459	25.8	0.0455	0.1518	0.03800	-61.8	-0.0771
340.0	240.19	0.2266	26.8	0.0457	0.1486	0.03882	-56.7	-0.0702
360.0	245.97	0.2091	27.6	0.0457	0.1455	0.03971	-51.7	-0.0635
380.0	251.51	0.1931	28.3	0.0455	0.1425	0.04066	-46.7	-0.0569
400.0	256.83	0.1783	28.7	0.0451	0.1394	0.04169	-41.8	-0.0505
420.0	261.93	0.1646	28.9	0.0445	0.1363	0.0428	-36.9	-0.0441
440.0	266.83	0.1516	28.7	0.0435	0.1332	0.0441	-31.9	-0.0377
460.0	271.55	0.1392	28.3	0.0421	0.1298	0.0457	-26.9	-0.0312
480.0	276.07	0.1271	27.4	0.0402	0.1262	0.0475	-21.7	-0.0246
500.0	280.40	0.1148	25.8	0.0374	0.1221	0.0498	-16.1	-0.0175
520.0	284.52	0.1018	23.1	0.0332	0.1170	0.0531	-9.7	-0.0096

TABLE B1 THERMODYNAMIC PROPERTIES ON THE VAPOR-LIQUID PHASE BOUNDARY

THE BUBBLE POINT AT INCREMENTS OF PRESSURE

	LIQUID, X = 0.1000				COEXISTING VAPOR			
P	T	V	H	S	X	V	H	S
PSIA	DEG F	FT3 LB	BTU LB	BTU/LB F		FT3 LB	BTU/LB	BTU LB-F
4.0	-38.36	0.02547	-223.6	0.3701	0.0186	19.085	-51.6	0.0255
5.0	-30.24	0.02566	-219.5	-0.3606	0.0196	15.516	-49.1	0.0241
6.0	-23.32	0.02582	216.0	0.3526	0.0205	13.102	-46.9	0.0230
8.0	-11.88	0.02609	-210.2	-0.3394	0.0219	10.031	-43.4	0.0217
10.0	-2.51	0.02633	-205.4	-0.3288	0.0231	8.153	-40.5	0.0210
14.696	14.76	0.02678	-196.3	-0.3094	0.0254	5.696	-35.0	0.0203
20.0	29.69	0.02719	-188.4	-0.2930	0.0275	4.270	-30.3	0.0203
25.0	41.18	0.02753	-182.1	-0.2804	0.0291	3.463	-26.7	0.0207
30.0	51.02	0.02783	-176.7	-0.2697	0.0305	2.916	-23.6	0.0213
35.0	59.68	0.02810	-171.9	-0.2604	0.0318	2.519	-20.8	0.0219
40.0	67.45	0.02836	-167.5	-0.2521	0.0329	2.219	-18.4	0.0226
50.0	81.02	0.02883	-159.7	-0.2376	0.0350	1.791	-14.1	0.0239
60.0	92.67	0.02926	-152.9	-0.2253	0.0368	1.502	-10.4	0.0252
70.0	102.95	0.02966	-146.8	-0.2144	0.0385	1.2917	-7.3	0.0265
80.0	112.19	0.03004	-141.2	-0.2047	0.0400	1.1324	-4.4	0.0278
100.0	128.36	0.03076	-131.3	-0.1878	0.0428	0.9059	0.5	0.0301
120.0	142.29	0.03144	-122.5	-0.1732	0.0452	0.7522	4.6	0.0321
140.0	154.61	0.03209	-114.5	-0.1603	0.0475	0.6408	8.2	0.0340
160.0	165.69	0.03274	-107.1	-0.1486	0.0495	0.5561	11.3	0.0357
180.0	175.81	0.03338	-100.3	-0.1380	0.0515	0.4895	14.0	0.0371
200.0	185.13	0.03402	-93.9	-0.1281	0.0534	0.4355	16.5	0.0385
220.0	193.80	0.03467	-87.8	-0.1189	0.0552	0.3909	18.6	0.0396
240.0	201.91	0.03534	-81.9	-0.1102	0.0569	0.3533	20.6	0.0407
260.0	209.54	0.03602	-76.3	-0.1020	0.0586	0.3211	22.3	0.0416
280.0	216.75	0.03673	-70.9	-0.0942	0.0602	0.2932	23.8	0.0423
300.0	223.60	0.03747	-65.7	-0.0867	0.0619	0.2687	25.2	0.0429
320.0	230.12	0.03824	-60.6	-0.0794	0.0635	0.2470	26.3	0.0433
340.0	236.34	0.03906	-55.6	-0.0724	0.0651	0.2275	27.3	0.0436
360.0	242.31	0.03994	-50.7	-0.0656	0.0668	0.2098	28.1	0.0437
380.0	248.03	0.04089	-45.8	-0.0589	0.0685	0.1937	28.7	0.0436
400.0	253.53	0.04192	-41.0	-0.0523	0.0702	0.1789	29.0	0.0433
420.0	258.83	0.0431	-36.1	-0.0458	0.0721	0.1650	29.1	0.0427
440.0	263.95	0.0444	-31.3	-0.0393	0.0740	0.1520	29.0	0.0418
460.0	268.90	0.0459	-26.3	-0.0327	0.0762	0.1395	28.5	0.0406
480.0	273.69	0.0477	-21.1	-0.0258	0.0786	0.1272	27.5	0.0388
500.0	278.35	0.0500	-15.6	-0.0185	0.0815	0.1149	25.9	0.0361
520.0	282.89	0.0533	-9.3	-0.0103	0.0852	0.1018	23.1	0.0321

Table B2. THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

VAPOR, P = 1 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	75.38	-57.1	0.0680	75.1	0.00240	0.327
-20.0	79.00	-50.5	0.0834	78.7	0.00229	0.339
0.0	82.63	-43.6	0.0986	82.4	0.00219	0.350
20.0	86.26	-36.6	0.1137	86.0	0.00209	0.363
40.0	89.88	-29.2	0.1287	89.7	0.00201	0.375
60.0	93.50	-21.6	0.1437	93.3	0.00193	0.387
80.0	97.12	-13.7	0.1585	96.9	0.00186	0.399
100.0	100.74	-5.6	0.1733	100.6	0.00179	0.412
110.0	102.54	-1.5	0.1806	102.4	0.00176	0.418
120.0	104.35	2.8	0.1880	104.2	0.00173	0.424
130.0	106.16	7.0	0.1953	106.0	0.00170	0.431
140.0	107.97	11.4	0.2026	107.8	0.00167	0.437
150.0	109.78	15.8	0.2099	109.6	0.00164	0.443
160.0	111.58	20.2	0.2171	111.5	0.00162	0.449
170.0	113.39	24.8	0.2244	113.3	0.00159	0.456
180.0	115.20	29.4	0.2316	115.1	0.00157	0.462
190.0	117.00	34.0	0.2388	116.9	0.00154	0.468
200.0	118.81	38.7	0.2460	118.7	0.00152	0.474
210.0	120.62	43.5	0.2532	120.5	0.00150	0.481
220.0	122.42	48.3	0.2604	122.3	0.00147	0.487
230.0	124.23	53.2	0.2675	124.1	0.00145	0.493
240.0	126.04	58.2	0.2746	125.9	0.00143	0.499
250.0	127.84	63.2	0.2818	127.7	0.00141	0.505
260.0	129.65	68.3	0.2889	129.6	0.00139	0.511
270.0	131.45	73.4	0.2960	131.4	0.00137	0.517
280.0	133.26	78.6	0.3030	133.2	0.00135	0.523
290.0	135.06	83.9	0.3101	135.0	0.00134	0.529
300.0	136.87	89.2	0.3172	136.8	0.00132	0.535
310.0	138.67	94.6	0.3242	138.6	0.00130	0.541
320.0	140.48	100.0	0.3312	140.4	0.00128	0.546
330.0	142.28	105.5	0.3382	142.2	0.00127	0.552
340.0	144.09	111.0	0.3452	144.0	0.00125	0.558
350.0	145.89	116.7	0.3521	145.8	0.00124	0.564
360.0	147.70	122.3	0.3591	147.6	0.00122	0.569
370.0	149.50	128.0	0.3660	149.4	0.00121	0.575
380.0	151.31	133.8	0.3730	151.2	0.00119	0.580
390.0	153.11	139.6	0.3799	153.0	0.00118	0.586
400.0	154.92	145.5	0.3867	154.9	0.00116	0.591
420.0	158.53	157.5	0.4005	158.5	0.00114	0.602
440.0	162.14	169.6	0.4141	162.1	0.00111	0.613
460.0	165.75	182.0	0.4277	165.7	0.00109	0.623
480.0	169.35	194.5	0.4412	169.3	0.00107	0.633
500.0	172.96	207.3	0.4546	172.9	0.00104	0.643
520.0	176.57	220.2	0.4680	176.5	0.00102	0.653
540.0	180.18	233.4	0.4813	180.1	0.00100	0.663
560.0	183.79	246.7	0.4945	183.7	0.00098	0.672
580.0	187.39	260.3	0.5076	187.4	0.00096	0.682
600.0	191.00	274.0	0.5207	191.0	0.00094	0.691

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 5 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02544	-224.4	-0.3720	1890.	65.8	0.495
-30.24	0.02566	-219.5	-0.3606	1817.	64.0	0.502
COEXISTING VAPOR (x=.0196)						
-30.24	15.52	-49.1	0.0241	76.3	0.01202	0.335
VAPOR						
COEXISTING LIQUID (x=.3661)						
-19.84	0.02503	-229.9	-0.3553	1821.7	62.48	0.496
-19.84	15.59	-51.0	0.0289	76.6	0.01174	0.341
-10.0	15.96	-47.6	0.0365	78.5	0.01146	0.347
0.0	16.33	-44.2	0.0441	80.4	0.01119	0.353
10.0	16.70	-40.6	0.0517	82.3	0.01093	0.358
20.0	17.07	-37.0	0.0593	84.2	0.01069	0.364
30.0	17.44	-33.4	0.0668	86.1	0.01045	0.370
40.0	17.81	-29.7	0.0744	88.0	0.01023	0.376
50.0	18.18	-25.9	0.0819	89.9	0.01002	0.382
60.0	18.55	-22.0	0.0894	91.8	0.00981	0.388
70.0	18.92	-18.1	0.0969	93.7	0.00962	0.395
80.0	19.28	-14.1	0.1043	95.5	0.00943	0.401
90.0	19.65	-10.1	0.1117	97.4	0.00925	0.407
100.0	20.02	-6.0	0.1191	99.3	0.00908	0.413
110.0	20.38	-1.8	0.1265	101.1	0.00891	0.419
120.0	20.75	2.4	0.1338	103.0	0.00875	0.426
130.0	21.12	6.7	0.1412	104.8	0.00860	0.432
140.0	21.48	11.1	0.1485	106.7	0.00845	0.438
150.0	21.85	15.5	0.1558	108.6	0.00830	0.444
160.0	22.21	19.9	0.1631	110.4	0.00817	0.450
170.0	22.58	24.5	0.1703	112.2	0.00803	0.457
180.0	22.94	29.1	0.1776	114.1	0.00790	0.463
190.0	23.31	33.7	0.1848	115.9	0.00778	0.469
200.0	23.67	38.5	0.1920	117.8	0.00766	0.475
220.0	24.40	48.1	0.2064	121.5	0.00742	0.487
240.0	25.13	57.9	0.2207	125.1	0.00721	0.499
260.0	25.85	68.1	0.2349	128.8	0.00700	0.512
280.0	26.58	78.4	0.2491	132.5	0.00681	0.523
300.0	27.31	89.0	0.2632	136.1	0.00663	0.535
320.0	28.03	99.8	0.2773	139.8	0.00645	0.547
340.0	28.76	110.9	0.2913	143.4	0.00629	0.558
360.0	29.48	122.1	0.3052	147.1	0.00613	0.570
380.0	30.21	133.6	0.3191	150.7	0.00599	0.581
400.0	30.93	145.4	0.3329	154.4	0.00585	0.592
420.0	31.66	157.3	0.3466	158.0	0.00571	0.602
440.0	32.38	169.5	0.3603	161.6	0.00558	0.613
460.0	33.11	181.8	0.3738	165.3	0.00546	0.623
480.0	33.83	194.4	0.3874	168.9	0.00534	0.634
500.0	34.55	207.1	0.4008	172.5	0.00523	0.644
520.0	35.28	220.1	0.4142	176.2	0.00512	0.653
540.0	36.00	233.3	0.4275	179.8	0.00502	0.663
560.0	36.73	246.6	0.4407	183.4	0.00492	0.673
580.0	37.45	260.1	0.4538	187.1	0.00482	0.682
600.0	38.17	273.9	0.4669	190.7	0.00473	0.691

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 10 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02543	-224.4	-0.3721	1893.	65.9	0.495
-20.0	0.02590	-214.4	-0.3487	1739.	62.1	0.509
-2.51	0.02633	-205.4	-0.3287	1600.	58.6	0.519
COEXISTING VAPOR (x=.0231)						
-2.51	8.15	-40.5	0.0210	79.1	0.0232	0.355
			VAPOR			
COEXISTING LIQUID (x=.3282)						
7.21	0.02577	-214.2	-0.3237	1610.	57.6	0.515
7.21	8.17	-42.3	0.0255	79.3	0.0227	0.360
10.0	8.23	-41.3	0.0277	79.8	0.0225	0.361
20.0	8.42	-37.7	0.0353	81.9	0.0220	0.367
30.0	8.61	-34.0	0.0429	83.9	0.0214	0.373
40.0	8.80	-30.2	0.0505	85.9	0.0210	0.379
50.0	8.99	-26.4	0.0580	87.9	0.0205	0.385
60.0	9.18	-22.5	0.0656	89.8	0.0200	0.391
70.0	9.36	-18.6	0.0731	91.8	0.0196	0.397
80.0	9.55	-14.6	0.0806	93.7	0.0192	0.403
90.0	9.74	-10.5	0.0880	95.7	0.0188	0.409
100.0	9.93	-6.4	0.0954	97.6	0.0185	0.415
110.0	10.11	-2.2	0.1028	99.5	0.01811	0.421
120.0	10.30	2.0	0.1102	101.5	0.01777	0.427
130.0	10.48	6.3	0.1176	103.4	0.01744	0.433
140.0	10.67	10.7	0.1249	105.3	0.01713	0.439
150.0	10.85	15.1	0.1322	107.2	0.01682	0.445
160.0	11.04	19.6	0.1395	109.1	0.01653	0.451
170.0	11.22	24.1	0.1468	111.0	0.01625	0.458
180.0	11.41	28.7	0.1541	112.9	0.01598	0.464
190.0	11.59	33.4	0.1613	114.7	0.01572	0.470
200.0	11.78	38.1	0.1685	116.6	0.01547	0.476
220.0	12.15	47.8	0.1829	120.4	0.01499	0.488
240.0	12.51	57.7	0.1973	124.1	0.01454	0.500
260.0	12.88	67.8	0.2115	127.8	0.01412	0.512
280.0	13.25	78.1	0.2257	131.6	0.01372	0.524
300.0	13.61	88.7	0.2399	135.3	0.01335	0.536
320.0	13.98	99.6	0.2539	139.0	0.01299	0.547
340.0	14.34	110.6	0.2680	142.7	0.01266	0.559
360.0	14.71	121.9	0.2819	146.4	0.01234	0.570
380.0	15.07	133.4	0.2958	150.0	0.01204	0.581
400.0	15.44	145.2	0.3096	153.7	0.01175	0.592
420.0	15.80	157.1	0.3233	157.4	0.01147	0.603
440.0	16.16	169.3	0.3370	161.1	0.01121	0.613
460.0	16.53	181.6	0.3506	164.7	0.01096	0.624
480.0	16.89	194.2	0.3641	168.4	0.01073	0.634
500.0	17.25	207.0	0.3775	172.1	0.01050	0.644
520.0	17.62	219.9	0.3909	175.7	0.01028	0.654
540.0	17.98	233.1	0.4042	179.4	0.01007	0.663
560.0	18.34	246.5	0.4174	183.0	0.00987	0.673
580.0	18.71	260.0	0.4306	186.7	0.00968	0.682
600.0	19.07	273.7	0.4437	190.3	0.00949	0.691

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 14.696 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02543	-224.4	-0.3721	1895.	65.9	0.495
-20.0	0.02590	-214.3	-0.3487	1742.	62.1	0.509
0.0	0.02639	-204.1	-0.3259	1582.	58.2	0.521
14.76	0.02678	-196.3	-0.3094	1463.	55.2	0.529
COEXISTING VAPOR (x=.0254)						
14.76	5.70	-35.0	0.0203	80.3	0.0335	0.367
			VAPOR			
COEXISTING LIQUID (x=.3073)						
24.06	0.02626	-204.3	-0.3046	1474.	54.4	0.526
24.06	5.70	-36.8	0.0246	80.4	0.0329	0.373
30.0	5.78	-34.6	0.0292	81.7	0.0324	0.376
40.0	5.92	-30.8	0.0368	83.8	0.0316	0.381
50.0	6.05	-27.0	0.0445	85.8	0.0308	0.387
60.0	6.18	-23.1	0.0520	87.9	0.0301	0.393
70.0	6.31	-19.1	0.0596	90.0	0.0294	0.399
80.0	6.44	-15.1	0.0671	92.0	0.0288	0.404
90.0	6.57	-11.0	0.0746	94.0	0.0282	0.410
100.0	6.70	-6.9	0.0820	96.0	0.0276	0.416
110.0	6.83	-2.7	0.0895	98.0	0.0270	0.422
120.0	6.96	1.6	0.0969	100.0	0.0265	0.428
130.0	7.09	5.9	0.1043	102.0	0.0260	0.434
140.0	7.21	10.3	0.1116	103.9	0.0255	0.440
150.0	7.34	14.7	0.1190	105.9	0.0250	0.447
160.0	7.47	19.2	0.1263	107.8	0.0246	0.453
170.0	7.60	23.8	0.1336	109.7	0.0242	0.459
180.0	7.72	28.4	0.1409	111.7	0.0237	0.465
190.0	7.85	33.1	0.1481	113.6	0.0233	0.471
200.0	7.98	37.8	0.1554	115.5	0.0230	0.477
220.0	8.23	47.5	0.1698	119.3	0.0222	0.489
240.0	8.48	57.4	0.1841	123.2	0.0215	0.501
260.0	8.73	67.5	0.1984	126.9	0.0209	0.513
280.0	8.98	77.9	0.2126	130.7	0.0203	0.525
300.0	9.23	88.5	0.2268	134.5	0.0197	0.536
320.0	9.49	99.3	0.2409	138.2	0.0192	0.548
340.0	9.74	110.4	0.2549	142.0	0.0187	0.559
360.0	9.98	121.7	0.2689	145.7	0.0182	0.570
380.0	10.23	133.2	0.2827	149.4	0.0178	0.582
400.0	10.48	145.0	0.2966	153.1	0.0174	0.592
420.0	10.73	156.9	0.3103	156.8	0.01694	0.603
440.0	10.98	169.1	0.3240	160.6	0.01655	0.614
460.0	11.23	181.5	0.3376	164.2	0.01618	0.624
480.0	11.48	194.0	0.3511	167.9	0.01582	0.634
500.0	11.73	206.8	0.3646	171.6	0.01548	0.644
520.0	11.97	219.8	0.3779	175.3	0.01516	0.654
540.0	12.22	233.0	0.3913	179.0	0.01485	0.664
560.0	12.47	246.3	0.4045	182.7	0.01455	0.673
580.0	12.72	259.9	0.4176	186.3	0.01426	0.682
600.0	12.96	273.6	0.4307	190.0	0.01399	0.692

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 20 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02543	-224.4	-0.3721	1898.	66.0	0.495
-20.0	0.02589	-214.3	-0.3488	1744.	62.2	0.509
0.0	0.02639	-204.1	-0.3259	1584.	58.2	0.521
10.0	0.02665	-198.8	-0.3147	1503.	56.2	0.526
20.0	0.02692	-193.6	-0.3036	1423.	54.2	0.532
29.69	0.02720	-188.4	-0.2929	1345.	52.2	0.538
COEXISTING VAPOR (x=.0275)						
29.69	4.27	-30.3	0.0203	81.0	0.0452	0.379
			VAPOR			
COEXISTING LIQUID (x=.2908)						
38.62	0.02671	-195.5	-0.2882	1357.	51.5	0.536
38.62	4.27	-32.0	0.0246	81.0	0.0444	0.384
40.0	4.29	-31.5	0.0256	81.3	0.0443	0.385
50.0	4.39	-27.6	0.0333	83.5	0.0431	0.390
60.0	4.49	-23.7	0.0409	85.7	0.0420	0.396
70.0	4.58	-19.7	0.0485	87.8	0.0410	0.401
80.0	4.68	-15.6	0.0561	90.0	0.0400	0.407
90.0	4.78	-11.5	0.0636	92.1	0.0391	0.413
100.0	4.88	-7.4	0.0711	94.2	0.0382	0.418
110.0	4.97	-3.2	0.0786	96.2	0.0374	0.424
120.0	5.07	1.1	0.0860	98.3	0.0367	0.430
130.0	5.17	5.4	0.0935	100.3	0.0359	0.436
140.0	5.26	9.8	0.1008	102.4	0.0352	0.442
150.0	5.36	14.3	0.1082	104.4	0.0346	0.448
160.0	5.45	18.8	0.1155	106.4	0.0339	0.454
170.0	5.55	23.4	0.1229	108.4	0.0333	0.460
180.0	5.64	28.0	0.1302	110.3	0.0327	0.466
190.0	5.74	32.7	0.1374	112.3	0.0321	0.472
200.0	5.83	37.5	0.1447	114.3	0.0316	0.478
220.0	6.02	47.1	0.1592	118.2	0.0306	0.490
240.0	6.20	57.1	0.1735	122.1	0.0296	0.502
260.0	6.39	67.2	0.1878	125.9	0.0287	0.514
280.0	6.58	77.6	0.2021	129.8	0.0278	0.525
300.0	6.76	88.2	0.2163	133.6	0.0271	0.537
320.0	6.95	99.1	0.2304	137.4	0.0263	0.549
340.0	7.13	110.2	0.2444	141.2	0.0256	0.560
360.0	7.32	121.5	0.2584	145.0	0.0250	0.571
380.0	7.50	133.0	0.2723	148.7	0.0243	0.582
400.0	7.69	144.8	0.2861	152.5	0.0237	0.593
420.0	7.87	156.7	0.2999	156.2	0.0232	0.604
440.0	8.05	168.9	0.3135	160.0	0.0226	0.614
460.0	8.24	181.3	0.3271	163.7	0.0221	0.624
480.0	8.42	193.9	0.3407	167.4	0.0216	0.635
500.0	8.60	206.6	0.3541	171.1	0.0212	0.645
520.0	8.79	219.6	0.3675	174.8	0.0207	0.654
540.0	8.97	232.8	0.3808	178.5	0.0203	0.664
560.0	9.15	246.2	0.3941	182.2	0.0199	0.673
580.0	9.33	259.7	0.4072	185.9	0.0195	0.683
600.0	9.52	273.5	0.4203	189.6	0.0191	0.692

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 25 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02543	-224.4	-0.3721	1900.	66.1	0.495
-20.0	0.02589	-214.3	-0.3488	1746.	62.3	0.509
0.0	0.02639	-204.0	-0.3260	1586.	58.3	0.521
10.0	0.02665	-198.8	-0.3147	1505.	56.3	0.526
20.0	0.02692	-193.5	-0.3036	1425.	54.3	0.532
30.0	0.02720	-188.2	-0.2926	1344.	52.2	0.539
40.0	0.02750	-182.8	-0.2817	1265.	50.2	0.545
41.18	0.02753	-182.1	-0.2804	1256.	50.0	0.546
COEXISTING VAPOR (x=.0291)						
41.18	3.464	-26.7	0.0207	81.2	0.0563	0.389
			VAPOR			
COEXISTING LIQUID (x=.2790)						
49.83	0.02706	-188.7	-0.2757	1268.	49.4	0.543
49.83	3.463	-28.3	0.0248	81.1	0.0554	0.394
50.0	3.464	-28.2	0.0250	81.2	0.0554	0.394
60.0	3.546	-24.3	0.0327	83.5	0.0539	0.399
70.0	3.627	-20.3	0.0403	85.8	0.0524	0.404
80.0	3.707	-16.2	0.0480	88.0	0.0511	0.409
90.0	3.787	-12.1	0.0555	90.2	0.0499	0.415
100.0	3.866	-7.9	0.0631	92.4	0.0487	0.421
110.0	3.945	-3.6	0.0706	94.5	0.0476	0.426
120.0	4.024	0.7	0.0780	96.7	0.0466	0.432
130.0	4.102	5.0	0.0855	98.8	0.0456	0.438
140.0	4.179	9.4	0.0929	100.9	0.0447	0.444
150.0	4.257	13.9	0.1003	102.9	0.0438	0.449
160.0	4.334	18.4	0.1077	105.0	0.0430	0.455
170.0	4.411	23.0	0.1150	107.0	0.0421	0.461
180.0	4.488	27.6	0.1223	109.1	0.0414	0.467
190.0	4.564	32.3	0.1296	111.1	0.0406	0.473
200.0	4.640	37.1	0.1369	113.1	0.0399	0.479
220.0	4.792	46.8	0.1514	117.1	0.0386	0.491
240.0	4.943	56.7	0.1658	121.0	0.0373	0.503
260.0	5.094	66.9	0.1801	125.0	0.0362	0.515
280.0	5.244	77.3	0.1944	128.9	0.0351	0.526
300.0	5.393	88.0	0.2086	132.7	0.0341	0.538
320.0	5.543	98.8	0.2227	136.6	0.0331	0.549
340.0	5.692	109.9	0.2368	140.4	0.0322	0.560
360.0	5.840	121.3	0.2507	144.2	0.0314	0.572
380.0	5.988	132.8	0.2646	148.1	0.0306	0.583
400.0	6.136	144.6	0.2785	151.8	0.0298	0.593
420.0	6.284	156.5	0.2922	155.6	0.0291	0.604
440.0	6.432	168.7	0.3059	159.4	0.0284	0.614
460.0	6.579	181.1	0.3196	163.2	0.0278	0.625
480.0	6.726	193.7	0.3331	166.9	0.0271	0.635
500.0	6.873	206.5	0.3466	170.7	0.0265	0.645
520.0	7.020	219.5	0.3600	174.4	0.0260	0.655
540.0	7.167	232.6	0.3733	178.1	0.0254	0.664
560.0	7.314	246.0	0.3865	181.9	0.0249	0.674
580.0	7.460	259.6	0.3997	185.6	0.0244	0.683
600.0	7.607	273.3	0.4128	189.3	0.0239	0.692

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 30 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02543	-224.3	-0.3721	1902.	66.1	0.495
-20.0	0.02589	-214.3	-0.3488	1748.	62.3	0.509
0.0	0.02639	-204.0	-0.3260	1588.	58.4	0.521
10.0	0.02665	-198.8	-0.3148	1507.	56.3	0.526
20.0	0.02692	-193.5	-0.3037	1427.	54.3	0.532
30.0	0.02720	-188.2	-0.2926	1346.	52.3	0.539
40.0	0.02749	-182.8	-0.2817	1267.	50.2	0.545
50.0	0.02780	-177.3	-0.2708	1189.	48.2	0.552
51.02	0.02783	-176.7	-0.2697	1181.	48.0	0.553
COEXISTING VAPOR (x=.0305)						
51.02	2.916	-23.6	0.0213	81.2	0.0675	0.397
			VAPOR			
COEXISTING LIQUID (x=.2694)						
59.43	0.02738	-182.8	-0.2651	1192.	47.5	0.550
59.43	2.914	-25.1	0.0253	81.1	0.0665	0.402
60.0	2.918	-24.9	0.0257	81.2	0.0664	0.402
70.0	2.987	-20.9	0.0335	83.6	0.0645	0.407
80.0	3.056	-16.8	0.0411	86.0	0.0628	0.412
90.0	3.124	-12.6	0.0488	88.3	0.0612	0.418
100.0	3.192	-8.4	0.0564	90.6	0.0596	0.423
110.0	3.259	-4.1	0.0639	92.8	0.0582	0.428
120.0	3.326	0.2	0.0714	95.0	0.0569	0.434
130.0	3.392	4.6	0.0789	97.2	0.0556	0.440
140.0	3.458	9.0	0.0863	99.3	0.0544	0.445
150.0	3.523	13.5	0.0937	101.5	0.0533	0.451
160.0	3.588	18.0	0.1011	103.6	0.0522	0.457
170.0	3.653	22.6	0.1085	105.7	0.0512	0.463
180.0	3.718	27.3	0.1158	107.8	0.0502	0.468
190.0	3.783	32.0	0.1231	109.8	0.0493	0.474
200.0	3.847	36.8	0.1304	111.9	0.0484	0.480
220.0	3.975	46.5	0.1450	116.0	0.0467	0.492
240.0	4.102	56.4	0.1594	120.0	0.0452	0.504
260.0	4.229	66.6	0.1738	124.0	0.0438	0.515
280.0	4.355	77.1	0.1880	127.9	0.0424	0.527
300.0	4.480	87.7	0.2023	131.9	0.0412	0.538
320.0	4.606	98.6	0.2164	135.8	0.0400	0.550
340.0	4.730	109.7	0.2305	139.7	0.0389	0.561
360.0	4.855	121.0	0.2445	143.5	0.0379	0.572
380.0	4.979	132.6	0.2584	147.4	0.0369	0.583
400.0	5.103	144.4	0.2722	151.2	0.0359	0.594
420.0	5.227	156.3	0.2860	155.0	0.0351	0.604
440.0	5.350	168.5	0.2997	158.8	0.0342	0.615
460.0	5.474	180.9	0.3133	162.6	0.0334	0.625
480.0	5.597	193.5	0.3269	166.4	0.0327	0.635
500.0	5.720	206.3	0.3404	170.2	0.0320	0.645
520.0	5.843	219.3	0.3538	174.0	0.0313	0.655
540.0	5.965	232.5	0.3671	177.7	0.0306	0.665
560.0	6.088	245.9	0.3803	181.5	0.0300	0.674
580.0	6.211	259.4	0.3935	185.2	0.0294	0.683
600.0	6.333	273.2	0.4066	188.9	0.0288	0.692

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 40 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02542	-224.3	-0.3722	1907.	66.2	0.495
-20.0	0.02589	-214.3	-0.3489	1753.	62.4	0.509
0.0	0.02638	-204.0	-0.3260	1592.	58.4	0.520
10.0	0.02664	-198.8	-0.3148	1511.	56.4	0.526
20.0	0.02691	-193.5	-0.3037	1431.	54.4	0.532
30.0	0.02719	-188.2	-0.2927	1350.	52.4	0.538
40.0	0.02749	-182.7	-0.2817	1271.	50.3	0.545
50.0	0.02779	-177.2	-0.2709	1192.	48.3	0.552
60.0	0.02811	-171.7	-0.2601	1115.	46.3	0.559
67.45	0.02836	-167.45	-0.2520	1058.	44.8	0.565
COEXISTING VAPOR (x=.0329)						
67.45	2.219	-18.4	0.0226	80.8	0.0905	0.413
			VAPOR			
COEXISTING LIQUID (x=.2543)						
75.46	0.02794	-172.9	-0.2475	1070.	44.4	0.563
75.46	2.215	-19.9	0.0264	80.6	0.0893	0.417
80.0	2.240	-18.0	0.0300	81.8	0.0880	0.419
90.0	2.294	-13.7	0.0377	84.3	0.0853	0.424
100.0	2.347	-9.5	0.0454	86.8	0.0829	0.428
110.0	2.400	-5.1	0.0530	89.2	0.0807	0.433
120.0	2.452	-0.8	0.0606	91.6	0.0786	0.438
130.0	2.503	3.6	0.0682	93.9	0.0767	0.444
140.0	2.555	8.1	0.0757	96.3	0.0749	0.449
150.0	2.605	12.6	0.0832	98.5	0.0732	0.454
160.0	2.656	17.2	0.0906	100.8	0.0716	0.460
170.0	2.706	21.8	0.0980	103.0	0.0701	0.466
180.0	2.756	26.5	0.1054	105.2	0.0687	0.471
190.0	2.805	31.3	0.1128	107.3	0.0673	0.477
200.0	2.855	36.1	0.1201	109.5	0.0660	0.483
220.0	2.953	45.8	0.1347	113.7	0.0636	0.494
240.0	3.050	55.8	0.1492	117.9	0.0614	0.506
260.0	3.147	66.1	0.1636	122.0	0.0593	0.517
280.0	3.243	76.5	0.1779	126.1	0.0574	0.528
300.0	3.339	87.2	0.1922	130.2	0.0557	0.540
320.0	3.434	98.1	0.2064	134.2	0.0540	0.551
340.0	3.529	109.2	0.2204	138.2	0.0525	0.562
360.0	3.623	120.6	0.2345	142.1	0.0511	0.573
380.0	3.718	132.2	0.2484	146.0	0.0497	0.584
400.0	3.811	144.0	0.2623	150.0	0.0484	0.595
420.0	3.905	156.0	0.2761	153.8	0.0472	0.605
440.0	3.999	168.2	0.2898	157.7	0.0461	0.616
460.0	4.092	180.6	0.3034	161.6	0.0450	0.626
480.0	4.185	193.2	0.3170	165.4	0.0439	0.636
500.0	4.278	206.0	0.3305	169.3	0.0429	0.646
520.0	4.371	219.0	0.3439	173.1	0.0420	0.656
540.0	4.464	232.2	0.3572	176.9	0.0411	0.665
560.0	4.556	245.6	0.3705	180.7	0.0402	0.675
580.0	4.649	259.2	0.3837	184.5	0.0394	0.684
600.0	4.741	272.9	0.3968	188.2	0.0386	0.693

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 50 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02542	-224.3	-0.3722	1912.	66.4	0.495
-20.0	0.02588	-214.2	-0.3489	1757.	62.5	0.509
0.0	0.02638	-204.0	-0.3261	1597.	58.6	0.520
10.0	0.02664	-198.8	-0.3149	1516.	56.5	0.526
20.0	0.02691	-193.5	-0.3038	1435.	54.5	0.532
30.0	0.02719	-188.1	-0.2928	1354.	52.5	0.538
40.0	0.02748	-182.7	-0.2818	1275.	50.4	0.545
50.0	0.02779	-177.2	-0.2709	1196.	48.4	0.552
60.0	0.02811	-171.6	-0.2601	1119.	46.4	0.559
70.0	0.02844	-166.0	-0.2494	1043.	44.3	0.567
80.0	0.02880	-160.3	-0.2387	969.	42.3	0.575
81.02	0.02883	-159.7	-0.2376	961.	42.1	0.576
COEXISTING VAPOR (x=.0350)						
81.02	1.792	-14.1	0.0239	80.0	0.1140	0.426
			VAPOR			
COEXISTING LIQUID (x=.2428)						
88.69	0.02843	-164.6	-0.2332	972.	41.8	0.574
88.69	1.788	-15.5	0.0276	79.7	0.1127	0.431
90.0	1.793	-14.9	0.0287	80.1	0.1122	0.431
100.0	1.838	-10.6	0.0365	82.8	0.1085	0.435
110.0	1.883	-6.2	0.0442	85.5	0.1052	0.439
120.0	1.926	-1.8	0.0519	88.1	0.1022	0.444
130.0	1.969	2.7	0.0596	90.6	0.0994	0.448
140.0	2.012	7.2	0.0672	93.1	0.0968	0.453
150.0	2.054	11.7	0.0747	95.5	0.0944	0.458
160.0	2.095	16.3	0.0822	97.9	0.0921	0.463
170.0	2.137	21.0	0.0897	100.2	0.0900	0.469
180.0	2.178	25.7	0.0971	102.5	0.0880	0.474
190.0	2.219	30.5	0.1045	104.8	0.0862	0.480
200.0	2.259	35.3	0.1119	107.0	0.0844	0.485
220.0	2.339	45.2	0.1266	111.5	0.0811	0.496
240.0	2.419	55.2	0.1411	115.8	0.0781	0.507
260.0	2.498	65.5	0.1556	120.1	0.0754	0.519
280.0	2.576	76.0	0.1700	124.3	0.0729	0.530
300.0	2.654	86.7	0.1842	128.4	0.0706	0.541
320.0	2.731	97.6	0.1985	132.6	0.0684	0.552
340.0	2.808	108.8	0.2126	136.6	0.0664	0.563
360.0	2.884	120.1	0.2266	140.7	0.0645	0.574
380.0	2.960	131.7	0.2406	144.7	0.0628	0.585
400.0	3.036	143.5	0.2545	148.7	0.0611	0.596
420.0	3.112	155.6	0.2683	152.7	0.0596	0.606
440.0	3.188	167.8	0.2821	156.6	0.0581	0.616
460.0	3.263	180.2	0.2957	160.5	0.0567	0.627
480.0	3.338	192.8	0.3093	164.4	0.0553	0.637
500.0	3.413	205.7	0.3228	168.3	0.0541	0.646
520.0	3.488	218.7	0.3362	172.2	0.0529	0.656
540.0	3.562	231.9	0.3496	176.0	0.0517	0.666
560.0	3.637	245.3	0.3628	179.9	0.0506	0.675
580.0	3.711	258.9	0.3760	183.7	0.0496	0.684
600.0	3.786	272.6	0.3892	187.6	0.0486	0.693

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 60 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02542	-224.3	-0.3723	1917.	66.5	0.495
-20.0	0.02588	-214.2	-0.3489	1762.	62.7	0.509
0.0	0.02637	-203.9	-0.3261	1601.	58.7	0.520
10.0	0.02663	-198.7	-0.3149	1520.	56.6	0.526
20.0	0.02690	-193.5	-0.3038	1439.	54.6	0.532
30.0	0.02718	-188.1	-0.2928	1358.	52.6	0.538
40.0	0.02747	-182.7	-0.2819	1279.	50.5	0.545
50.0	0.02778	-177.2	-0.2710	1200.	48.5	0.552
60.0	0.02810	-171.6	-0.2602	1123.	46.4	0.559
70.0	0.02843	-166.0	-0.2494	1047.	44.4	0.567
80.0	0.02879	-160.3	-0.2388	972.	42.4	0.575
90.0	0.02916	-154.5	-0.2281	900.	40.4	0.584
92.67	0.02926	-152.9	-0.2253	880.	39.9	0.587
COEXISTING VAPOR (x=.0368)						
92.67	1.502	-10.4	0.0253	79.0	0.1383	0.439
			VAPOR			
COEXISTING LIQUID (x=.2335)						
100.06	0.02888	-157.4	-0.2210	891.	39.6	0.584
100.06	1.498	-11.8	0.0289	78.6	0.1368	0.443
110.0	1.536	-7.4	0.0367	81.5	0.1321	0.446
120.0	1.574	-2.9	0.0445	84.4	0.1278	0.450
130.0	1.612	1.6	0.0522	87.1	0.1239	0.454
140.0	1.649	6.2	0.0599	89.7	0.1203	0.458
150.0	1.685	10.8	0.0675	92.3	0.1170	0.463
160.0	1.721	15.5	0.0751	94.9	0.1139	0.467
170.0	1.757	20.2	0.0827	97.3	0.1111	0.472
180.0	1.792	24.9	0.0901	99.8	0.1085	0.477
190.0	1.827	29.7	0.0976	102.2	0.1060	0.483
200.0	1.861	34.6	0.1050	104.5	0.1037	0.488
220.0	1.930	44.5	0.1198	109.1	0.0994	0.499
240.0	1.998	54.6	0.1344	113.7	0.0955	0.510
260.0	2.065	64.9	0.1489	118.1	0.0921	0.521
280.0	2.131	75.4	0.1633	122.4	0.0889	0.532
300.0	2.197	86.1	0.1777	126.7	0.0859	0.543
320.0	2.262	97.1	0.1919	130.9	0.0832	0.554
340.0	2.327	108.3	0.2061	135.1	0.0807	0.565
360.0	2.391	119.7	0.2202	139.3	0.0783	0.575
380.0	2.456	131.3	0.2342	143.4	0.0761	0.586
400.0	2.520	143.1	0.2481	147.4	0.0741	0.597
420.0	2.583	155.2	0.2619	151.5	0.0721	0.607
440.0	2.647	167.4	0.2757	155.5	0.0703	0.617
460.0	2.710	179.8	0.2893	159.5	0.0686	0.627
480.0	2.773	192.5	0.3029	163.4	0.0669	0.637
500.0	2.836	205.3	0.3165	167.4	0.0654	0.647
520.0	2.899	218.4	0.3299	171.3	0.0639	0.657
540.0	2.962	231.6	0.3433	175.2	0.0625	0.666
560.0	3.024	245.0	0.3565	179.1	0.0611	0.676
580.0	3.087	258.6	0.3698	183.0	0.0599	0.685
600.0	3.149	272.4	0.3829	186.9	0.0586	0.694

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 70 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02541	-224.2	-0.3723	1921.	66.6	0.495
-20.0	0.02588	-214.2	-0.3490	1766.	62.8	0.509
0.0	0.02637	-203.9	-0.3262	1605.	58.8	0.520
10.0	0.02663	-198.7	-0.3150	1524.	56.7	0.526
20.0	0.02690	-193.4	-0.3039	1443.	54.7	0.532
30.0	0.02718	-188.1	-0.2929	1362.	52.6	0.538
40.0	0.02747	-182.7	-0.2819	1282.	50.6	0.545
50.0	0.02777	-177.2	-0.2710	1204.	48.6	0.552
60.0	0.02809	-171.6	-0.2602	1127.	46.5	0.559
70.0	0.02843	-166.0	-0.2495	1051.	44.5	0.567
80.0	0.02878	-160.2	-0.2388	976.	42.5	0.575
90.0	0.02915	-154.4	-0.2282	903.	40.5	0.584
100.0	0.02954	-148.5	-0.2175	832.	38.5	0.593
102.95	0.02966	-146.8	-0.2144	811.	38.0	0.596
COEXISTING VAPOR (x=.0385)						
102.95	1.292	-7.3	0.0265	77.8	0.1634	0.450
			VAPOR			
COEXISTING LIQUID (x=.2257)						
110.09	0.02929	-150.9	-0.2103	821.	37.7	0.594
110.09	1.288	-8.6	0.0301	77.4	0.1617	0.454
120.0	1.322	-4.0	0.0379	80.5	0.1558	0.457
130.0	1.356	0.6	0.0458	83.5	0.1505	0.460
140.0	1.389	5.2	0.0536	86.3	0.1456	0.464
150.0	1.421	9.9	0.0613	89.1	0.1412	0.468
160.0	1.453	14.6	0.0689	91.8	0.1372	0.472
170.0	1.485	19.3	0.0765	94.4	0.1335	0.476
180.0	1.516	24.1	0.0841	97.0	0.1301	0.481
190.0	1.547	28.9	0.0916	99.5	0.1269	0.486
200.0	1.577	33.8	0.0991	102.0	0.1239	0.491
220.0	1.637	43.8	0.1139	106.8	0.1185	0.501
240.0	1.697	53.9	0.1286	111.5	0.1136	0.512
260.0	1.755	64.3	0.1432	116.1	0.1093	0.523
280.0	1.813	74.8	0.1576	120.6	0.1053	0.533
300.0	1.870	85.6	0.1720	125.0	0.1017	0.544
320.0	1.927	96.6	0.1863	129.3	0.0984	0.555
340.0	1.983	107.8	0.2005	133.6	0.0953	0.566
360.0	2.039	119.2	0.2146	137.8	0.0925	0.576
380.0	2.095	130.9	0.2286	142.0	0.0898	0.587
400.0	2.151	142.7	0.2426	146.2	0.0873	0.598
420.0	2.206	154.8	0.2564	150.3	0.0850	0.608
440.0	2.261	167.0	0.2702	154.4	0.0828	0.618
460.0	2.315	179.5	0.2839	158.4	0.0807	0.628
480.0	2.370	192.1	0.2975	162.4	0.0787	0.638
500.0	2.424	205.0	0.3111	166.4	0.0768	0.648
520.0	2.478	218.0	0.3245	170.4	0.0751	0.657
540.0	2.533	231.3	0.3379	174.4	0.0734	0.667
560.0	2.587	244.7	0.3512	178.3	0.0718	0.676
580.0	2.640	258.3	0.3644	182.2	0.0703	0.685
600.0	2.694	272.1	0.3775	186.2	0.0688	0.694

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 80 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02541	-224.2	-0.3723	1926.	66.8	0.495
-20.0	0.02587	-214.2	-0.3490	1770.	62.9	0.509
0.0	0.02636	-203.9	-0.3262	1609.	58.9	0.520
10.0	0.02662	-198.7	-0.3150	1528.	56.8	0.526
20.0	0.02689	-193.4	-0.3039	1447.	54.8	0.532
30.0	0.02717	-188.1	-0.2929	1366.	52.7	0.538
40.0	0.02746	-182.6	-0.2820	1286.	50.7	0.545
50.0	0.02777	-177.2	-0.2711	1208.	48.7	0.551
60.0	0.02808	-171.6	-0.2603	1130.	46.6	0.559
70.0	0.02842	-165.9	-0.2496	1054.	44.6	0.567
80.0	0.02877	-160.2	-0.2389	980.	42.6	0.575
90.0	0.02914	-154.4	-0.2282	907.	40.6	0.584
100.0	0.02953	-148.5	-0.2176	836.	38.6	0.593
110.0	0.02995	-142.5	-0.2070	766.	36.7	0.603
112.19	0.03004	-141.2	-0.2047	751.	36.2	0.605
COEXISTING VAPOR (x=.0400)						
112.19	1.133	-4.4	0.0278	76.5	0.1892	0.462
			VAPOR			
COEXISTING LIQUID (x=.2190)						
119.10	0.02968	-145.1	-0.2007	761.	36.0	0.603
119.10	1.129	-5.7	0.0312	76.1	0.1875	0.465
120.0	1.131	-5.3	0.0319	76.4	0.1868	0.466
130.0	1.163	-0.6	0.0399	79.7	0.1796	0.468
140.0	1.193	4.1	0.0478	82.8	0.1731	0.470
150.0	1.222	8.8	0.0556	85.7	0.1674	0.473
160.0	1.252	13.6	0.0634	88.6	0.1621	0.477
170.0	1.280	18.4	0.0710	91.4	0.1574	0.481
180.0	1.308	23.2	0.0787	94.1	0.1530	0.485
190.0	1.336	28.1	0.0862	96.8	0.1489	0.490
200.0	1.364	33.1	0.0938	99.4	0.1452	0.494
220.0	1.418	43.0	0.1087	104.4	0.1384	0.504
240.0	1.471	53.2	0.1235	109.3	0.1325	0.514
260.0	1.523	63.6	0.1381	114.1	0.1271	0.525
280.0	1.574	74.2	0.1526	118.7	0.1223	0.535
300.0	1.625	85.1	0.1671	123.2	0.1180	0.546
320.0	1.676	96.1	0.1814	127.7	0.1140	0.556
340.0	1.726	107.3	0.1956	132.1	0.1103	0.567
360.0	1.775	118.8	0.2098	136.4	0.1069	0.578
380.0	1.825	130.4	0.2238	140.7	0.1037	0.588
400.0	1.874	142.3	0.2378	144.9	0.1008	0.599
420.0	1.922	154.4	0.2517	149.1	0.0980	0.609
440.0	1.971	166.6	0.2654	153.2	0.0954	0.619
460.0	2.019	179.1	0.2792	157.3	0.0930	0.629
480.0	2.067	191.8	0.2928	161.4	0.0907	0.639
500.0	2.115	204.7	0.3063	165.5	0.0885	0.649
520.0	2.163	217.7	0.3198	169.5	0.0864	0.658
540.0	2.211	231.0	0.3332	173.5	0.0844	0.667
560.0	2.258	244.4	0.3465	177.5	0.0826	0.677
580.0	2.306	258.0	0.3597	181.5	0.0808	0.686
600.0	2.353	271.8	0.3729	185.5	0.0791	0.695

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 90 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02541	-224.2	-0.3724	1931.	66.9	0.495
-20.0	0.02587	-214.1	-0.3491	1775.	63.0	0.508
0.0	0.02636	-203.9	-0.3263	1613.	59.0	0.520
10.0	0.02662	-198.6	-0.3151	1532.	56.9	0.526
20.0	0.02689	-193.4	-0.3040	1451.	54.9	0.532
30.0	0.02717	-188.0	-0.2930	1370.	52.8	0.538
40.0	0.02746	-182.6	-0.2820	1290.	50.8	0.544
50.0	0.02776	-177.1	-0.2712	1212.	48.7	0.551
60.0	0.02808	-171.6	-0.2604	1134.	46.7	0.559
70.0	0.02841	-165.9	-0.2496	1058.	44.7	0.566
80.0	0.02876	-160.2	-0.2390	984.	42.7	0.575
90.0	0.02913	-154.4	-0.2283	911.	40.7	0.583
100.0	0.02952	-148.5	-0.2177	840.	38.7	0.593
110.0	0.02994	-142.5	-0.2071	770.	36.8	0.603
120.0	0.03038	-136.4	-0.1965	702.	34.8	0.613
120.61	0.03041	-136.1	-0.1959	698.	34.7	0.614
COEXISTING VAPOR (x=.0414)						
120.61	1.007	-1.8	0.0290	75.2	0.2159	0.472
			VAPOR			
COEXISTING LIQUID (x=.2131)						
127.32	0.03006	-139.7	-0.1919	707.	34.5	0.612
127.32	1.003	-3.1	0.0323	74.7	0.2140	0.476
130.0	1.011	-1.8	0.0345	75.7	0.2116	0.476
140.0	1.040	3.0	0.0425	79.0	0.2031	0.478
150.0	1.067	7.8	0.0504	82.3	0.1956	0.480
160.0	1.094	12.6	0.0583	85.4	0.1889	0.483
170.0	1.121	17.5	0.0660	88.3	0.1828	0.486
180.0	1.147	22.4	0.0737	91.2	0.1773	0.490
190.0	1.172	27.3	0.0814	94.0	0.1722	0.494
200.0	1.197	32.2	0.0890	96.7	0.1676	0.498
220.0	1.246	42.3	0.1040	102.0	0.1593	0.507
240.0	1.295	52.6	0.1188	107.1	0.1520	0.517
260.0	1.342	63.0	0.1335	112.0	0.1456	0.527
280.0	1.389	73.6	0.1481	116.8	0.1399	0.537
300.0	1.435	84.5	0.1626	121.5	0.1347	0.548
320.0	1.480	95.6	0.1770	126.0	0.1300	0.558
340.0	1.525	106.8	0.1912	130.5	0.1257	0.568
360.0	1.570	118.3	0.2054	135.0	0.1217	0.579
380.0	1.614	130.0	0.2195	139.3	0.1180	0.589
400.0	1.658	141.9	0.2335	143.6	0.1145	0.600
420.0	1.702	154.0	0.2474	147.9	0.1113	0.610
440.0	1.746	166.3	0.2612	152.1	0.1083	0.620
460.0	1.789	178.8	0.2749	156.3	0.1055	0.630
480.0	1.832	191.4	0.2886	160.4	0.1028	0.640
500.0	1.875	204.3	0.3021	164.6	0.1003	0.649
520.0	1.918	217.4	0.3156	168.6	0.0979	0.659
540.0	1.960	230.7	0.3290	172.7	0.0956	0.668
560.0	2.003	244.1	0.3424	176.8	0.0935	0.677
580.0	2.045	257.7	0.3556	180.8	0.0914	0.686
600.0	2.088	271.5	0.3688	184.8	0.0895	0.695

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 100 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02540	-224.1	-0.3724	1936.	67.0	0.495
-20.0	0.02586	-214.1	-0.3491	1779.	63.1	0.508
0.0	0.02635	-203.8	-0.3263	1617.	59.1	0.520
20.0	0.02688	-193.3	-0.3040	1455.	55.0	0.532
40.0	0.02745	-182.6	-0.2821	1294.	50.9	0.544
60.0	0.02807	-171.5	-0.2604	1138.	46.8	0.558
80.0	0.02875	-160.2	-0.2390	987.	42.8	0.574
100.0	0.02951	-148.5	-0.2178	843.	38.8	0.593
110.0	0.02992	-142.5	-0.2072	774.	36.8	0.602
120.0	0.03037	-136.4	-0.1966	706.	34.9	0.613
128.36	0.03076	-131.3	-0.1877	650.	33.3	0.623
COEXISTING VAPOR (x=.0428)						
128.36	0.906	0.5	0.0301	73.8	0.2434	0.483
			VAPOR			
COEXISTING LIQUID (x=.2079)						
134.88	0.03042	-134.6	-0.1839	659.	33.1	0.620
134.88	0.902	-0.7	0.0333	73.3	0.2414	0.486
140.0	0.916	1.8	0.0375	75.2	0.2359	0.487
150.0	0.942	6.7	0.0456	78.7	0.2263	0.487
160.0	0.968	11.6	0.0535	82.0	0.2177	0.489
170.0	0.992	16.5	0.0614	85.2	0.2101	0.492
180.0	1.017	21.4	0.0692	88.2	0.2032	0.495
190.0	1.040	26.4	0.0769	91.2	0.1969	0.498
200.0	1.064	31.4	0.0845	94.0	0.1912	0.502
210.0	1.087	36.5	0.0921	96.8	0.1860	0.506
220.0	1.109	41.6	0.0997	99.6	0.1811	0.510
230.0	1.132	46.7	0.1072	102.2	0.1766	0.515
240.0	1.154	51.9	0.1146	104.9	0.1724	0.520
250.0	1.176	57.1	0.1220	107.4	0.1685	0.524
260.0	1.197	62.4	0.1294	109.9	0.1648	0.529
270.0	1.219	67.7	0.1367	112.4	0.1613	0.534
280.0	1.240	73.1	0.1440	114.9	0.1580	0.539
290.0	1.261	78.5	0.1513	117.3	0.1549	0.544
300.0	1.282	83.9	0.1586	119.7	0.1519	0.549
320.0	1.324	95.0	0.1730	124.4	0.1464	0.560
340.0	1.365	106.3	0.1873	129.0	0.1414	0.570
360.0	1.406	117.8	0.2015	133.5	0.1368	0.580
380.0	1.446	129.5	0.2156	138.0	0.1325	0.590
400.0	1.486	141.5	0.2296	142.4	0.1286	0.601
420.0	1.526	153.6	0.2435	146.7	0.1249	0.611
440.0	1.565	165.9	0.2574	151.0	0.1214	0.621
460.0	1.605	178.4	0.2711	155.2	0.1182	0.631
480.0	1.644	191.1	0.2848	159.4	0.1151	0.640
500.0	1.683	204.0	0.2984	163.6	0.1123	0.650
520.0	1.721	217.1	0.3119	167.8	0.1095	0.659
540.0	1.760	230.3	0.3253	171.9	0.1070	0.669
560.0	1.799	243.8	0.3386	176.0	0.1045	0.678
580.0	1.837	257.4	0.3519	180.0	0.1022	0.687
600.0	1.875	271.3	0.3650	184.1	0.1000	0.696

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 120 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02540	-224.1	-0.3725	1945.	67.3	0.494
-20.0	0.02586	-214.0	-0.3492	1788.	63.3	0.508
0.0	0.02635	-203.8	-0.3264	1626.	59.3	0.520
20.0	0.02687	-193.3	-0.3041	1463.	55.2	0.531
40.0	0.02744	-182.5	-0.2822	1302.	51.1	0.544
60.0	0.02806	-171.5	-0.2605	1145.	47.0	0.558
80.0	0.02874	-160.2	-0.2392	995.	42.9	0.574
100.0	0.02949	-148.5	-0.2179	851.	39.0	0.592
110.0	0.02990	-142.5	-0.2073	781.	37.0	0.602
120.0	0.03034	-136.4	-0.1968	713.	35.1	0.612
130.0	0.03081	-130.2	-0.1862	647.	33.2	0.624
140.0	0.03132	-123.9	-0.1756	583.	31.2	0.636
142.29	0.03144	-122.5	-0.1731	568.	30.8	0.639
COEXISTING VAPOR (x=.0452)						
142.29	0.752	4.6	0.0321	70.8	0.301	0.503
			VAPOR			
COEXISTING LIQUID (x=.1990)						
148.47	0.03112	-125.5	-0.1695	576.	30.7	0.636
148.47	0.749	3.5	0.0352	70.4	0.299	0.507
150.0	0.753	4.3	0.0365	71.0	0.297	0.506
160.0	0.776	9.4	0.0448	74.8	0.283	0.505
170.0	0.799	14.4	0.0529	78.5	0.271	0.505
180.0	0.821	19.5	0.0608	82.0	0.260	0.507
190.0	0.842	24.6	0.0687	85.3	0.251	0.509
200.0	0.863	29.7	0.0765	88.5	0.243	0.511
210.0	0.883	34.8	0.0843	91.6	0.235	0.514
220.0	0.903	40.0	0.0919	94.5	0.228	0.518
230.0	0.923	45.2	0.0995	97.5	0.222	0.522
240.0	0.942	50.4	0.1071	100.3	0.216	0.526
250.0	0.961	55.7	0.1146	103.0	0.210	0.530
260.0	0.980	61.0	0.1220	105.8	0.205	0.534
270.0	0.998	66.4	0.1294	108.4	0.201	0.539
280.0	1.017	71.8	0.1368	111.0	0.196	0.543
290.0	1.035	77.3	0.1441	113.6	0.192	0.548
300.0	1.053	82.8	0.1514	116.1	0.188	0.553
320.0	1.089	94.0	0.1659	121.1	0.181	0.563
340.0	1.124	105.3	0.1803	125.9	0.174	0.573
360.0	1.159	116.9	0.1946	130.6	0.168	0.583
380.0	1.193	128.7	0.2087	135.2	0.163	0.593
400.0	1.227	140.6	0.2228	139.8	0.157	0.603
420.0	1.261	152.8	0.2368	144.3	0.153	0.613
440.0	1.295	165.1	0.2507	148.7	0.148	0.622
460.0	1.328	177.7	0.2645	153.1	0.144	0.632
480.0	1.361	190.4	0.2782	157.4	0.140	0.642
500.0	1.394	203.3	0.2918	161.7	0.137	0.651
520.0	1.427	216.4	0.3053	166.0	0.133	0.661
540.0	1.460	229.7	0.3187	170.2	0.130	0.670
560.0	1.492	243.2	0.3321	174.4	0.127	0.679
580.0	1.525	256.9	0.3454	178.6	0.124	0.688
600.0	1.557	270.7	0.3586	182.7	0.121	0.697

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 140 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02539	-224.0	-0.3726	1955.	67.5	0.494
-20.0	0.02585	-214.0	-0.3493	1797.	63.6	0.508
0.0	0.02634	-203.7	-0.3265	1634.	59.5	0.520
20.0	0.02686	-193.2	-0.3042	1471.	55.4	0.531
40.0	0.02743	-182.5	-0.2823	1309.	51.2	0.544
60.0	0.02804	-171.5	-0.2607	1153.	47.1	0.558
80.0	0.02872	-160.1	-0.2393	1002.	43.1	0.574
100.0	0.02947	-148.5	-0.2181	858.	39.2	0.592
110.0	0.02988	-142.5	-0.2075	788.	37.2	0.601
120.0	0.03031	-136.4	-0.1969	721.	35.3	0.612
130.0	0.03078	-130.2	-0.1864	655.	33.3	0.623
140.0	0.03128	-123.9	-0.1758	590.	31.4	0.635
150.0	0.03183	-117.5	-0.1652	528.	29.5	0.648
154.61	0.03210	-114.5	-0.1602	499.	28.6	0.655
COEXISTING VAPOR (x=.0475)						
154.61	0.641	8.2	0.0340	67.8	0.362	0.524
			VAPOR			
COEXISTING LIQUID (x=.1916)						
160.49	0.03179	-117.2	-0.1568	506.	28.6	0.652
160.49	0.638	7.1	0.0370	67.3	0.360	0.527
170.0	0.658	12.1	0.0450	71.3	0.342	0.523
180.0	0.679	17.4	0.0532	75.3	0.327	0.522
190.0	0.699	22.6	0.0613	79.1	0.313	0.522
200.0	0.718	27.8	0.0693	82.6	0.301	0.522
210.0	0.737	33.1	0.0772	86.1	0.290	0.524
220.0	0.755	38.3	0.0850	89.3	0.280	0.526
230.0	0.772	43.6	0.0927	92.5	0.271	0.529
240.0	0.790	48.9	0.1004	95.6	0.263	0.533
250.0	0.807	54.3	0.1080	98.6	0.256	0.536
260.0	0.824	59.7	0.1155	101.5	0.249	0.540
270.0	0.841	65.1	0.1230	104.3	0.243	0.544
280.0	0.857	70.6	0.1304	107.1	0.237	0.548
290.0	0.873	76.1	0.1378	109.8	0.231	0.553
300.0	0.889	81.6	0.1452	112.5	0.226	0.557
320.0	0.921	92.9	0.1598	117.7	0.217	0.566
340.0	0.952	104.3	0.1742	122.8	0.208	0.576
360.0	0.983	115.9	0.1886	127.7	0.201	0.586
380.0	1.013	127.7	0.2028	132.5	0.194	0.595
400.0	1.043	139.7	0.2169	137.2	0.187	0.605
420.0	1.072	151.9	0.2310	141.9	0.182	0.615
440.0	1.102	164.3	0.2449	146.5	0.176	0.624
460.0	1.131	176.9	0.2587	151.0	0.171	0.634
480.0	1.160	189.7	0.2725	155.5	0.166	0.643
500.0	1.188	202.6	0.2861	159.9	0.162	0.653
520.0	1.217	215.8	0.2997	164.2	0.158	0.662
540.0	1.245	229.1	0.3131	168.6	0.154	0.671
560.0	1.273	242.6	0.3265	172.9	0.150	0.680
580.0	1.301	256.3	0.3398	177.1	0.147	0.689
600.0	1.329	270.2	0.3530	181.3	0.143	0.698

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 160 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02538	-224.0	-0.3727	1964.	67.8	0.494
-20.0	0.02584	-213.9	-0.3494	1806.	63.8	0.508
0.0	0.02633	-203.7	-0.3266	1642.	59.7	0.520
20.0	0.02685	-193.2	-0.3043	1478.	55.5	0.531
40.0	0.02742	-182.5	-0.2824	1317.	51.4	0.544
60.0	0.02803	-171.4	-0.2608	1160.	47.3	0.558
80.0	0.02870	-160.1	-0.2394	1010.	43.3	0.573
100.0	0.02945	-148.4	-0.2182	865.	39.3	0.591
110.0	0.02986	-142.5	-0.2077	796.	37.4	0.601
120.0	0.03029	-136.4	-0.1971	728.	35.4	0.611
130.0	0.03075	-130.2	-0.1865	662.	33.5	0.622
140.0	0.03125	-123.9	-0.1760	598.	31.6	0.634
150.0	0.03179	-117.5	-0.1654	535.	29.7	0.647
160.0	0.03238	-110.9	-0.1547	474.	27.8	0.662
165.69	0.03274	-107.1	-0.1486	440.	26.7	0.671
COEXISTING VAPOR (x=.0495)						
165.69	0.556	11.3	0.0357	64.6	0.427	0.544
			VAPOR			
COEXISTING LIQUID (x=.1852)						
171.32	0.03244	-109.6	-0.1453	447.	26.7	0.668
171.32	0.554	10.3	0.0385	64.2	0.425	0.547
180.0	0.571	15.1	0.0460	68.2	0.404	0.542
190.0	0.590	20.5	0.0544	72.5	0.384	0.538
200.0	0.608	25.8	0.0626	76.5	0.367	0.536
210.0	0.626	31.2	0.0707	80.3	0.351	0.536
220.0	0.643	36.6	0.0786	83.9	0.338	0.537
230.0	0.659	42.0	0.0865	87.4	0.326	0.538
240.0	0.675	47.4	0.0943	90.7	0.315	0.541
250.0	0.691	52.8	0.1020	94.0	0.305	0.543
260.0	0.707	58.3	0.1096	97.1	0.296	0.546
270.0	0.722	63.8	0.1172	100.1	0.288	0.550
280.0	0.737	69.3	0.1247	103.1	0.281	0.554
290.0	0.752	74.8	0.1322	106.0	0.274	0.558
300.0	0.766	80.4	0.1396	108.8	0.267	0.562
320.0	0.795	91.8	0.1543	114.3	0.255	0.570
340.0	0.823	103.3	0.1688	119.6	0.245	0.579
360.0	0.850	115.0	0.1833	124.8	0.235	0.588
380.0	0.877	126.8	0.1976	129.8	0.227	0.598
400.0	0.904	138.9	0.2118	134.7	0.219	0.607
420.0	0.930	151.1	0.2258	139.5	0.212	0.617
440.0	0.957	163.6	0.2398	144.2	0.205	0.626
460.0	0.982	176.2	0.2537	148.9	0.199	0.636
480.0	1.008	189.0	0.2674	153.5	0.193	0.645
500.0	1.034	202.0	0.2811	158.0	0.188	0.654
520.0	1.059	215.1	0.2947	162.5	0.183	0.663
540.0	1.084	228.5	0.3082	166.9	0.178	0.673
560.0	1.109	242.0	0.3216	171.3	0.174	0.681
580.0	1.134	255.7	0.3349	175.7	0.169	0.690
600.0	1.159	269.6	0.3482	180.0	0.166	0.699

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 180 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02538	-223.9	-0.3728	1973.	68.0	0.494
-20.0	0.02583	-213.9	-0.3495	1814.	64.0	0.508
0.0	0.02632	-203.6	-0.3267	1651.	59.9	0.519
20.0	0.02684	-193.1	-0.3044	1486.	55.7	0.531
40.0	0.02740	-182.4	-0.2825	1325.	51.6	0.543
60.0	0.02801	-171.4	-0.2609	1168.	47.5	0.557
80.0	0.02869	-160.1	-0.2395	1017.	43.5	0.573
100.0	0.02943	-148.4	-0.2184	873.	39.5	0.591
110.0	0.02983	-142.4	-0.2078	803.	37.5	0.600
120.0	0.03026	-136.4	-0.1973	735.	35.6	0.610
130.0	0.03072	-130.2	-0.1867	669.	33.7	0.621
140.0	0.03122	-123.9	-0.1762	605.	31.8	0.633
150.0	0.03175	-117.5	-0.1656	543.	29.9	0.646
160.0	0.03234	-111.0	-0.1549	482.	28.0	0.660
170.0	0.03298	-104.3	-0.1442	422.	26.1	0.676
175.81	0.03338	-100.3	-0.1380	389.	25.0	0.687
COEXISTING VAPOR (x=.0515)						
175.81	0.4896	14.0	0.0372	61.5	0.496	0.565
			VAPOR			
COEXISTING LIQUID (x=.1796)						
181.19	0.03310	-102.5	-0.1348	395.	25.0	0.684
181.19	0.4872	13.1	0.0399	61.0	0.494	0.567
190.0	0.5038	18.1	0.0476	65.4	0.468	0.560
200.0	0.5216	23.7	0.0561	70.0	0.443	0.554
210.0	0.5386	29.2	0.0645	74.3	0.422	0.551
220.0	0.5548	34.7	0.0726	78.3	0.403	0.549
230.0	0.5705	40.2	0.0807	82.1	0.387	0.549
240.0	0.5858	45.7	0.0886	85.7	0.372	0.550
250.0	0.6006	51.3	0.0964	89.2	0.360	0.552
260.0	0.615	56.8	0.1042	92.6	0.348	0.554
270.0	0.629	62.4	0.1118	95.8	0.337	0.557
280.0	0.643	67.9	0.1194	99.0	0.328	0.560
290.0	0.657	73.6	0.1270	102.1	0.319	0.563
300.0	0.670	79.2	0.1345	105.1	0.310	0.567
320.0	0.696	90.6	0.1493	110.9	0.296	0.574
340.0	0.722	102.2	0.1640	116.4	0.283	0.583
360.0	0.747	114.0	0.1785	121.8	0.271	0.592
380.0	0.772	125.9	0.1928	127.0	0.261	0.601
400.0	0.796	138.0	0.2071	132.1	0.251	0.610
420.0	0.820	150.3	0.2212	137.1	0.243	0.619
440.0	0.844	162.8	0.2352	142.0	0.235	0.628
460.0	0.867	175.4	0.2491	146.8	0.227	0.637
480.0	0.890	188.2	0.2629	151.5	0.221	0.647
500.0	0.913	201.3	0.2766	156.1	0.214	0.656
520.0	0.936	214.5	0.2903	160.7	0.209	0.665
540.0	0.959	227.8	0.3038	165.3	0.203	0.674
560.0	0.982	241.4	0.3172	169.8	0.198	0.683
580.0	1.004	255.1	0.3306	174.2	0.193	0.691
600.0	1.026	269.1	0.3438	178.6	0.188	0.700

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 200 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02537	-223.8	-0.3728	1983.	68.2	0.494
-20.0	0.02583	-213.8	-0.3496	1823.	64.2	0.508
0.0	0.02631	-203.6	-0.3268	1659.	60.1	0.519
20.0	0.02683	-193.1	-0.3045	1494.	55.9	0.531
40.0	0.02739	-182.4	-0.2826	1332.	51.8	0.543
60.0	0.02800	-171.3	-0.2610	1175.	47.7	0.557
80.0	0.02867	-160.0	-0.2397	1024.	43.6	0.573
100.0	0.02941	-148.4	-0.2185	880.	39.7	0.590
110.0	0.02981	-142.4	-0.2080	810.	37.7	0.600
120.0	0.03024	-136.4	-0.1974	743.	35.8	0.610
130.0	0.03069	-130.2	-0.1869	677.	33.9	0.621
140.0	0.03118	-123.9	-0.1763	613.	32.0	0.632
150.0	0.03171	-117.5	-0.1658	550.	30.1	0.645
160.0	0.03229	-111.0	-0.1552	489.	28.2	0.659
170.0	0.03293	-104.3	-0.1445	430.	26.3	0.675
180.0	0.03363	-97.5	-0.1337	372.	24.4	0.693
185.13	0.03403	-93.9	-0.1281	343.	23.5	0.703
COEXISTING VAPOR (x=.0534)						
185.13	0.4356	16.5	0.0385	58.3	0.570	0.586
			VAPOR			
COEXISTING LIQUID (x=.1746)						
190.29	0.03375	-95.9	-0.1251	349.	23.5	0.700
190.29	0.4335	15.6	0.0411	57.8	0.567	0.589
200.0	0.4509	21.3	0.0498	63.0	0.532	0.577
210.0	0.4677	27.0	0.0584	67.8	0.502	0.569
220.0	0.4836	32.7	0.0669	72.3	0.477	0.565
230.0	0.4988	38.4	0.0751	76.6	0.455	0.562
240.0	0.5134	44.0	0.0832	80.5	0.436	0.561
250.0	0.5276	49.6	0.0912	84.3	0.419	0.561
260.0	0.5413	55.3	0.0990	88.0	0.404	0.562
270.0	0.5547	60.9	0.1068	91.5	0.391	0.564
280.0	0.5677	66.6	0.1145	94.8	0.378	0.566
290.0	0.5805	72.2	0.1221	98.1	0.367	0.569
300.0	0.5931	77.9	0.1297	101.3	0.357	0.572
320.0	0.6175	89.5	0.1447	107.4	0.339	0.579
340.0	0.6413	101.1	0.1594	113.2	0.323	0.587
360.0	0.6646	113.0	0.1740	118.8	0.309	0.595
380.0	0.6874	124.9	0.1885	124.3	0.296	0.604
400.0	0.7097	137.1	0.2028	129.5	0.285	0.612
420.0	0.732	149.4	0.2170	134.7	0.275	0.621
440.0	0.754	162.0	0.2311	139.7	0.266	0.630
460.0	0.775	174.6	0.2450	144.7	0.257	0.639
480.0	0.796	187.5	0.2588	149.5	0.249	0.648
500.0	0.817	200.6	0.2726	154.3	0.242	0.657
520.0	0.838	213.8	0.2862	159.0	0.235	0.666
540.0	0.859	227.2	0.2998	163.6	0.229	0.675
560.0	0.879	240.8	0.3132	168.2	0.223	0.684
580.0	0.900	254.6	0.3266	172.8	0.217	0.693
600.0	0.920	268.5	0.3399	177.3	0.212	0.701

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 220 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02536	-223.8	-0.3729	1992.	68.5	0.494
-20.0	0.02582	-213.8	-0.3496	1832.	64.4	0.508
0.0	0.02630	-203.5	-0.3269	1667.	60.3	0.519
20.0	0.02682	-193.0	-0.3046	1502.	56.1	0.531
40.0	0.02738	-182.3	-0.2827	1340.	51.9	0.543
60.0	0.02799	-171.3	-0.2611	1183.	47.8	0.557
80.0	0.02865	-160.0	-0.2398	1031.	43.8	0.572
100.0	0.02939	-148.3	-0.2187	887.	39.8	0.590
110.0	0.02979	-142.4	-0.2081	818.	37.9	0.599
120.0	0.03021	-136.3	-0.1976	750.	36.0	0.609
130.0	0.03067	-130.2	-0.1871	684.	34.0	0.620
140.0	0.03115	-123.9	-0.1765	620.	32.1	0.631
150.0	0.03168	-117.5	-0.1660	558.	30.3	0.644
160.0	0.03225	-111.0	-0.1554	497.	28.4	0.658
170.0	0.03287	-104.3	-0.1447	438.	26.5	0.673
180.0	0.03357	-97.5	-0.1340	380.	24.7	0.691
190.0	0.03435	-90.5	-0.1231	324.	22.8	0.711
193.80	0.03468	-87.80	-0.1189	303.	22.0	0.720
COEXISTING VAPOR (x=.0552)						
193.80	0.3910	18.6	0.0397	55.0	0.648	0.609
			VAPOR			
COEXISTING LIQUID (x=.1701)						
198.75	0.03441	-89.6	-0.1160	308.	22.0	0.717
198.75	0.3891	17.9	0.0422	54.6	0.645	0.612
200.0	0.3913	18.6	0.0434	55.4	0.639	0.609
210.0	0.4084	24.7	0.0524	61.0	0.596	0.594
220.0	0.4244	30.6	0.0612	66.1	0.561	0.584
230.0	0.4394	36.4	0.0697	70.8	0.532	0.578
240.0	0.4536	42.2	0.0780	75.2	0.507	0.574
250.0	0.4673	47.9	0.0861	79.3	0.485	0.573
260.0	0.4805	53.6	0.0942	83.2	0.466	0.572
270.0	0.4933	59.4	0.1021	87.0	0.448	0.573
280.0	0.5058	65.1	0.1099	90.6	0.433	0.574
290.0	0.5179	70.9	0.1176	94.1	0.419	0.576
300.0	0.5298	76.6	0.1253	97.4	0.406	0.578
320.0	0.5529	88.3	0.1404	103.9	0.384	0.584
340.0	0.5752	100.0	0.1552	110.0	0.365	0.591
360.0	0.5970	111.9	0.1699	115.8	0.348	0.598
380.0	0.6182	124.0	0.1845	121.5	0.333	0.607
400.0	0.6390	136.2	0.1988	127.0	0.320	0.615
420.0	0.660	148.6	0.2131	132.3	0.308	0.624
440.0	0.680	161.1	0.2272	137.5	0.297	0.632
460.0	0.700	173.9	0.2412	142.6	0.288	0.641
480.0	0.719	186.8	0.2551	147.5	0.278	0.650
500.0	0.738	199.9	0.2689	152.4	0.270	0.659
520.0	0.758	213.1	0.2826	157.3	0.262	0.668
540.0	0.777	226.6	0.2961	162.0	0.255	0.677
560.0	0.796	240.2	0.3096	166.7	0.248	0.685
580.0	0.815	254.0	0.3230	171.3	0.242	0.694
600.0	0.833	267.9	0.3363	175.9	0.235	0.702

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 240 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02536	-223.7	-0.3730	2001.	68.7	0.494
-20.0	0.02581	-213.7	-0.3497	1840.	64.6	0.508
0.0	0.02629	-203.5	-0.3270	1675.	60.5	0.519
20.0	0.02681	-193.0	-0.3047	1510.	56.3	0.530
40.0	0.02737	-182.3	-0.2828	1347.	52.1	0.543
60.0	0.02797	-171.3	-0.2613	1190.	48.0	0.557
80.0	0.02864	-159.9	-0.2399	1039.	44.0	0.572
100.0	0.02937	-148.3	-0.2188	894.	40.0	0.589
110.0	0.02977	-142.4	-0.2083	825.	38.1	0.599
120.0	0.03019	-136.3	-0.1978	757.	36.1	0.609
130.0	0.03064	-130.2	-0.1872	691.	34.2	0.619
140.0	0.03112	-123.9	-0.1767	627.	32.3	0.631
150.0	0.03164	-117.5	-0.1662	565.	30.4	0.643
160.0	0.03221	-111.0	-0.1556	504.	28.6	0.656
170.0	0.03282	-104.4	-0.1450	445.	26.7	0.672
180.0	0.03351	-97.6	-0.1342	388.	24.9	0.689
190.0	0.03428	-90.6	-0.1234	332.	23.0	0.709
200.0	0.03516	-83.3	-0.1124	277.	21.1	0.733
201.91	0.03534	-81.91	-0.1102	267.	20.7	0.739
201.91	0.3534	20.6	0.0407	51.8	0.731	0.634
206.66	0.03508	-83.6	-0.1074	272.	20.7	0.735
206.66	0.3517	19.9	0.0431	51.4	0.728	0.636
210.0	0.3575	22.0	0.0463	53.5	0.709	0.628
220.0	0.3738	28.2	0.0555	59.3	0.660	0.610
230.0	0.3889	34.2	0.0643	64.6	0.620	0.598
240.0	0.4031	40.2	0.0729	69.5	0.586	0.591
250.0	0.4166	46.1	0.0813	74.1	0.558	0.586
260.0	0.4295	51.9	0.0895	78.3	0.533	0.583
270.0	0.4419	57.8	0.0975	82.4	0.512	0.582
280.0	0.4539	63.6	0.1054	86.2	0.492	0.582
290.0	0.4655	69.4	0.1133	89.9	0.475	0.583
300.0	0.4769	75.3	0.1210	93.5	0.460	0.585
320.0	0.4989	87.0	0.1363	100.3	0.432	0.589
340.0	0.5200	98.9	0.1513	106.7	0.409	0.595
360.0	0.5405	110.9	0.1661	112.8	0.390	0.602
380.0	0.5605	123.0	0.1807	118.7	0.372	0.610
400.0	0.5800	135.3	0.1952	124.4	0.357	0.618
420.0	0.599	147.7	0.2095	129.9	0.343	0.626
440.0	0.618	160.3	0.2236	135.2	0.330	0.635
460.0	0.636	173.1	0.2377	140.5	0.319	0.643
480.0	0.655	186.1	0.2516	145.6	0.309	0.652
500.0	0.673	199.2	0.2654	150.6	0.299	0.661
520.0	0.691	212.5	0.2791	155.5	0.290	0.669
540.0	0.709	225.9	0.2927	160.4	0.282	0.678
560.0	0.726	239.6	0.3063	165.2	0.274	0.687
580.0	0.744	253.4	0.3197	169.9	0.267	0.695
600.0	0.761	267.4	0.3330	174.6	0.260	0.703

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 260 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02535	-223.7	-0.3731	2011.	69.0	0.494
-20.0	0.02580	-213.6	-0.3498	1849.	64.9	0.507
0.0	0.02629	-203.4	-0.3271	1683.	60.7	0.519
20.0	0.02680	-192.9	-0.3048	1518.	56.5	0.530
40.0	0.02736	-182.2	-0.2829	1355.	52.3	0.542
60.0	0.02796	-171.2	-0.2614	1197.	48.2	0.556
80.0	0.02862	-159.9	-0.2401	1046.	44.1	0.572
100.0	0.02935	-148.3	-0.2189	902.	40.2	0.589
110.0	0.02974	-142.3	-0.2084	832.	38.2	0.598
120.0	0.03016	-136.3	-0.1979	764.	36.3	0.608
130.0	0.03061	-130.2	-0.1874	699.	34.4	0.619
140.0	0.03109	-123.9	-0.1769	635.	32.5	0.630
150.0	0.03161	-117.5	-0.1664	572.	30.6	0.642
160.0	0.03216	-111.0	-0.1558	512.	28.8	0.655
170.0	0.03278	-104.4	-0.1452	453.	26.9	0.670
180.0	0.03345	-97.6	-0.1345	396.	25.1	0.687
190.0	0.03421	-90.6	-0.1237	340.	23.2	0.706
200.0	0.03507	-83.4	-0.1127	285.	21.3	0.730
209.54	0.03603	-76.3	-0.1020	234.	19.5	0.758
COEXISTING VAPOR (x=.0586)						
209.54	0.3212	22.3	0.0416	48.5	0.820	0.660
			VAPOR			
COEXISTING LIQUID (x=.1620)						
214.10	0.03577	-77.9	-0.0993	239.	19.5	0.754
214.10	0.3197	21.6	0.0439	48.2	0.817	0.662
220.0	0.3296	25.5	0.0497	52.1	0.777	0.645
230.0	0.3452	31.9	0.0589	58.1	0.722	0.624
240.0	0.3596	38.0	0.0678	63.6	0.677	0.611
250.0	0.3730	44.1	0.0765	68.6	0.640	0.602
260.0	0.3858	50.1	0.0849	73.3	0.608	0.597
270.0	0.3979	56.1	0.0931	77.6	0.581	0.594
280.0	0.4096	62.0	0.1012	81.8	0.557	0.592
290.0	0.4209	68.0	0.1091	85.7	0.536	0.592
300.0	0.4319	73.9	0.1170	89.5	0.517	0.592
320.0	0.4530	85.8	0.1324	96.7	0.484	0.595
340.0	0.4732	97.7	0.1476	103.4	0.457	0.600
360.0	0.4927	109.8	0.1625	109.8	0.433	0.606
380.0	0.5116	122.0	0.1772	115.9	0.413	0.613
400.0	0.5301	134.3	0.1917	121.8	0.395	0.621
420.0	0.548	146.8	0.2061	127.5	0.379	0.629
440.0	0.566	159.5	0.2203	133.0	0.365	0.637
460.0	0.583	172.3	0.2344	138.4	0.352	0.645
480.0	0.600	185.3	0.2483	143.6	0.340	0.654
500.0	0.617	198.5	0.2622	148.8	0.329	0.662
520.0	0.634	211.8	0.2759	153.8	0.319	0.671
540.0	0.651	225.3	0.2896	158.8	0.309	0.679
560.0	0.667	239.0	0.3031	163.7	0.300	0.688
580.0	0.684	252.8	0.3166	168.5	0.292	0.696
600.0	0.700	266.8	0.3299	173.3	0.285	0.705

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 280 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02534	-223.6	-0.3732	2020.	69.2	0.494
-20.0	0.02580	-213.6	-0.3499	1858.	65.1	0.507
0.0	0.02628	-203.3	-0.3272	1692.	60.9	0.519
20.0	0.02679	-192.9	-0.3049	1525.	56.6	0.530
40.0	0.02735	-182.2	-0.2831	1363.	52.5	0.542
60.0	0.02795	-171.2	-0.2615	1205.	48.3	0.556
80.0	0.02860	-159.9	-0.2402	1053.	44.3	0.571
100.0	0.02933	-148.3	-0.2191	909.	40.3	0.588
110.0	0.02972	-142.3	-0.2086	839.	38.4	0.598
120.0	0.03014	-136.3	-0.1981	772.	36.5	0.607
130.0	0.03058	-130.1	-0.1876	706.	34.6	0.618
140.0	0.03106	-123.9	-0.1771	642.	32.7	0.629
150.0	0.03157	-117.5	-0.1666	580.	30.8	0.641
160.0	0.03212	-111.1	-0.1560	519.	29.0	0.654
170.0	0.03273	-104.4	-0.1454	461.	27.1	0.669
180.0	0.03339	-97.7	-0.1348	403.	25.3	0.685
190.0	0.03414	-90.7	-0.1240	348.	23.4	0.704
200.0	0.03498	-83.5	-0.1130	294.	21.6	0.726
210.0	0.03596	-76.1	-0.1019	240.	19.7	0.755
216.75	0.03673	-70.9	-0.0942	205.	18.4	0.780
COEXISTING VAPOR (x=.0602)						
216.75	0.2933	23.8	0.0423	45.2	0.915	0.689
			VAPOR			
COEXISTING LIQUID (x=.1584)						
221.13	0.03648	-72.4	-0.0916	209.	18.4	0.775
221.13	0.2919	23.2	0.0446	44.9	0.911	0.691
230.0	0.3065	29.2	0.0533	51.1	0.843	0.660
240.0	0.3214	35.7	0.0627	57.3	0.782	0.637
250.0	0.3350	42.0	0.0716	62.9	0.733	0.623
260.0	0.3478	48.2	0.0803	68.0	0.692	0.613
270.0	0.3599	54.3	0.0887	72.7	0.657	0.607
280.0	0.3714	60.4	0.0970	77.2	0.628	0.603
290.0	0.3824	66.4	0.1051	81.4	0.601	0.601
300.0	0.3931	72.4	0.1130	85.5	0.578	0.601
320.0	0.4135	84.5	0.1287	93.1	0.539	0.602
340.0	0.4329	96.5	0.1440	100.1	0.506	0.605
360.0	0.4516	108.7	0.1590	106.8	0.479	0.611
380.0	0.4696	121.0	0.1738	113.1	0.455	0.617
400.0	0.4872	133.4	0.1884	119.2	0.435	0.624
420.0	0.504	146.0	0.2028	125.1	0.416	0.632
440.0	0.521	158.7	0.2171	130.8	0.400	0.639
460.0	0.538	171.5	0.2313	136.3	0.385	0.648
480.0	0.554	184.6	0.2453	141.7	0.372	0.656
500.0	0.570	197.8	0.2592	146.9	0.359	0.664
520.0	0.586	211.1	0.2730	152.1	0.348	0.673
540.0	0.601	224.7	0.2866	157.2	0.337	0.681
560.0	0.617	238.4	0.3002	162.2	0.328	0.689
580.0	0.632	252.2	0.3137	167.1	0.318	0.697
600.0	0.647	266.3	0.3270	172.0	0.310	0.706

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 300 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02534	-223.5	-0.3733	2029.	69.4	0.494
-20.0	0.02579	-213.5	-0.3500	1866.	65.3	0.507
0.0	0.02627	-203.3	-0.3273	1700.	61.1	0.519
20.0	0.02678	-192.8	-0.3050	1533.	56.8	0.530
40.0	0.02734	-182.1	-0.2832	1370.	52.6	0.542
60.0	0.02793	-171.1	-0.2616	1212.	48.5	0.556
80.0	0.02859	-159.8	-0.2403	1060.	44.5	0.571
100.0	0.02931	-148.2	-0.2192	916.	40.5	0.588
110.0	0.02970	-142.3	-0.2087	846.	38.5	0.597
120.0	0.03012	-136.3	-0.1982	779.	36.6	0.607
130.0	0.03056	-130.1	-0.1878	713.	34.7	0.617
140.0	0.03103	-123.9	-0.1773	649.	32.8	0.628
150.0	0.03154	-117.5	-0.1668	587.	31.0	0.640
160.0	0.03208	-111.1	-0.1562	527.	29.1	0.653
170.0	0.03268	-104.5	-0.1457	468.	27.3	0.667
180.0	0.03334	-97.7	-0.1350	411.	25.5	0.683
190.0	0.03407	-90.8	-0.1243	356.	23.6	0.701
200.0	0.03490	-83.6	-0.1134	302.	21.8	0.723
210.0	0.03586	-76.2	-0.1023	249.	19.9	0.751
220.0	0.03700	-68.6	-0.0909	197.	18.0	0.787
223.60	0.03747	-65.7	-0.0867	179.	17.3	0.804
COEXISTING VAPOR (x=.0619)						
223.60	0.2687	25.2	0.0429	41.9	1.017	0.722
			VAPOR			
COEXISTING LIQUID (x=.1550)						
227.80	0.03722	-67.0	-0.0842	182.	17.3	0.798
227.80	0.2676	24.6	0.0451	41.7	1.013	0.724
230.0	0.2714	26.2	0.0474	43.4	0.990	0.711
240.0	0.2872	33.1	0.0574	50.5	0.905	0.672
250.0	0.3013	39.7	0.0667	56.8	0.840	0.649
260.0	0.3143	46.1	0.0757	62.5	0.786	0.633
270.0	0.3264	52.4	0.0844	67.7	0.742	0.623
280.0	0.3379	58.6	0.0929	72.5	0.705	0.617
290.0	0.3488	64.8	0.1011	77.0	0.673	0.612
300.0	0.3592	70.9	0.1092	81.3	0.645	0.610
320.0	0.3791	83.1	0.1251	89.4	0.597	0.609
340.0	0.3979	95.3	0.1405	96.8	0.559	0.611
360.0	0.4159	107.6	0.1557	103.7	0.527	0.615
380.0	0.4332	120.0	0.1706	110.3	0.500	0.621
400.0	0.4500	132.4	0.1853	116.6	0.476	0.627
420.0	0.466	145.1	0.1998	122.7	0.455	0.634
440.0	0.482	157.8	0.2141	128.5	0.436	0.642
460.0	0.498	170.7	0.2283	134.2	0.420	0.650
480.0	0.513	183.8	0.2424	139.7	0.405	0.658
500.0	0.529	197.0	0.2563	145.1	0.391	0.666
520.0	0.544	210.4	0.2701	150.4	0.378	0.674
540.0	0.558	224.0	0.2838	155.6	0.366	0.682
560.0	0.573	237.7	0.2974	160.7	0.355	0.691
580.0	0.587	251.6	0.3109	165.7	0.345	0.699
600.0	0.602	265.7	0.3243	170.7	0.336	0.707

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 320 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02533	-223.5	-0.3733	2038.	69.7	0.493
-20.0	0.02578	-213.5	-0.3501	1875.	65.5	0.507
0.0	0.02626	-203.2	-0.3273	1708.	61.3	0.518
20.0	0.02677	-192.8	-0.3051	1541.	57.0	0.530
40.0	0.02732	-182.1	-0.2833	1378.	52.8	0.542
60.0	0.02792	-171.1	-0.2617	1219.	48.7	0.555
80.0	0.02857	-159.8	-0.2404	1068.	44.6	0.571
100.0	0.02929	-148.2	-0.2194	923.	40.7	0.588
120.0	0.03009	-136.2	-0.1984	786.	36.8	0.606
140.0	0.03100	-123.9	-0.1775	656.	33.0	0.627
160.0	0.03204	-111.1	-0.1565	534.	29.3	0.652
180.0	0.03328	-97.7	-0.1353	419.	25.7	0.681
200.0	0.03482	-83.7	-0.1137	310.	22.0	0.720
210.0	0.03575	-76.4	-0.1027	257.	20.2	0.746
220.0	0.03686	-68.7	-0.0913	206.	18.3	0.781
230.0	0.03823	-60.7	-0.0796	155.	16.3	0.831
230.12	0.03824	-60.6	-0.0794	154.	16.2	0.831
COEXISTING VAPOR (x=.0635)						
230.12	0.2470	26.3	0.0433	38.6	1.126	0.759
			VAPOR			
COEXISTING LIQUID (x=.1518)						
234.14	0.03800	-61.8	-0.0771	158.	16.3	0.825
234.14	0.2460	25.8	0.0455	38.4	1.122	0.761
240.0	0.2559	30.2	0.0517	43.2	1.055	0.723
250.0	0.2709	37.2	0.0617	50.4	0.964	0.683
260.0	0.2843	43.9	0.0711	56.7	0.894	0.658
270.0	0.2967	50.4	0.0801	62.4	0.838	0.643
280.0	0.3082	56.8	0.0888	67.6	0.791	0.632
290.0	0.3190	63.1	0.0972	72.5	0.751	0.625
300.0	0.3294	69.3	0.1055	77.1	0.717	0.621
310.0	0.3393	75.5	0.1136	81.5	0.687	0.618
320.0	0.3489	81.7	0.1216	85.6	0.660	0.617
330.0	0.3582	87.9	0.1294	89.6	0.636	0.617
340.0	0.3672	94.1	0.1372	93.4	0.615	0.617
350.0	0.3760	100.3	0.1449	97.1	0.595	0.619
360.0	0.3846	106.5	0.1525	100.7	0.578	0.620
370.0	0.3930	112.7	0.1600	104.1	0.561	0.622
380.0	0.4013	118.9	0.1675	107.5	0.546	0.625
390.0	0.4094	125.2	0.1749	110.8	0.532	0.628
400.0	0.4174	131.5	0.1823	114.0	0.519	0.631
420.0	0.433	144.2	0.1969	120.3	0.495	0.637
440.0	0.448	157.0	0.2113	126.3	0.474	0.645
460.0	0.463	169.9	0.2255	132.1	0.455	0.652
480.0	0.478	183.1	0.2396	137.8	0.439	0.660
500.0	0.492	196.3	0.2536	143.3	0.423	0.668
520.0	0.507	209.8	0.2674	148.7	0.409	0.676
540.0	0.521	223.4	0.2812	154.0	0.396	0.684
560.0	0.535	237.1	0.2948	159.2	0.384	0.692
580.0	0.548	251.0	0.3083	164.4	0.373	0.700
600.0	0.562	265.1	0.3218	169.4	0.362	0.708

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 340 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02532	-223.4	-0.3734	2048.	69.9	0.493
-20.0	0.02577	-213.4	-0.3502	1883.	65.7	0.507
0.0	0.02625	-203.2	-0.3274	1716.	61.4	0.518
20.0	0.02676	-192.7	-0.3052	1549.	57.2	0.529
40.0	0.02731	-182.0	-0.2834	1385.	53.0	0.542
60.0	0.02791	-171.0	-0.2618	1227.	48.8	0.555
80.0	0.02856	-159.8	-0.2406	1075.	44.8	0.570
100.0	0.02927	-148.2	-0.2195	930.	40.8	0.587
120.0	0.03007	-136.2	-0.1985	793.	37.0	0.606
140.0	0.03097	-123.9	-0.1776	663.	33.2	0.627
160.0	0.03201	-111.1	-0.1567	541.	29.5	0.651
180.0	0.03323	-97.8	-0.1355	426.	25.9	0.680
200.0	0.03474	-83.8	-0.1140	317.	22.2	0.718
210.0	0.03565	-76.5	-0.1030	265.	20.4	0.742
220.0	0.03673	-68.9	-0.0918	214.	18.5	0.775
230.0	0.03804	-60.9	-0.0801	164.	16.6	0.820
236.34	0.03906	-55.6	-0.0724	133.	15.3	0.863
COEXISTING VAPOR (x=.0651)						
236.34	0.2275	27.3	0.0436	35.3	1.245	0.803
			VAPOR			
COEXISTING LIQUID (x=.1486)						
240.19	0.03883	-56.7	-0.0702	136.	15.3	0.855
240.19	0.2266	26.8	0.0457	35.1	1.240	0.804
250.0	0.2429	34.3	0.0563	43.4	1.113	0.732
260.0	0.2571	41.4	0.0663	50.5	1.019	0.692
270.0	0.2698	48.2	0.0757	56.9	0.946	0.667
280.0	0.2815	54.8	0.0846	62.6	0.887	0.651
290.0	0.2925	61.3	0.0933	67.9	0.837	0.640
300.0	0.3028	67.7	0.1018	72.8	0.795	0.633
310.0	0.3126	74.0	0.1100	77.4	0.759	0.629
320.0	0.3221	80.3	0.1181	81.8	0.728	0.626
330.0	0.3312	86.5	0.1261	86.0	0.700	0.624
340.0	0.3400	92.8	0.1339	90.0	0.674	0.624
350.0	0.3486	99.0	0.1417	93.9	0.652	0.625
360.0	0.3569	105.3	0.1494	97.6	0.631	0.626
370.0	0.3651	111.6	0.1570	101.2	0.612	0.627
380.0	0.3731	117.8	0.1645	104.7	0.595	0.629
390.0	0.3809	124.2	0.1720	108.1	0.579	0.632
400.0	0.3887	130.5	0.1794	111.4	0.564	0.634
420.0	0.4037	143.2	0.1940	117.9	0.537	0.641
440.0	0.4184	156.1	0.2085	124.1	0.513	0.647
460.0	0.4328	169.1	0.2228	130.1	0.492	0.655
480.0	0.4468	182.3	0.2370	135.9	0.473	0.662
500.0	0.4606	195.6	0.2510	141.5	0.456	0.670
520.0	0.4742	209.1	0.2649	147.1	0.441	0.678
540.0	0.4876	222.7	0.2787	152.5	0.426	0.685
560.0	0.5009	236.5	0.2923	157.8	0.413	0.693
580.0	0.5140	250.4	0.3059	163.0	0.400	0.701
600.0	0.5269	264.6	0.3193	168.1	0.389	0.709

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 360 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02532	-223.4	-0.3735	2057.	70.2	0.493
-20.0	0.02577	-213.4	-0.3502	1892.	65.9	0.507
0.0	0.02624	-203.1	-0.3275	1724.	61.6	0.518
20.0	0.02675	-192.7	-0.3053	1556.	57.4	0.529
40.0	0.02730	-182.0	-0.2835	1392.	53.1	0.541
60.0	0.02790	-171.0	-0.2620	1234.	49.0	0.555
80.0	0.02854	-159.7	-0.2407	1082.	44.9	0.570
100.0	0.02925	-148.1	-0.2196	937.	41.0	0.587
120.0	0.03005	-136.2	-0.1987	800.	37.1	0.605
140.0	0.03094	-123.9	-0.1778	671.	33.4	0.626
160.0	0.03197	-111.1	-0.1569	548.	29.7	0.650
180.0	0.03318	-97.8	-0.1358	434.	26.1	0.678
200.0	0.03466	-83.9	-0.1143	325.	22.5	0.715
210.0	0.03556	-76.6	-0.1034	273.	20.6	0.739
220.0	0.03660	-69.0	-0.0922	223.	18.8	0.769
230.0	0.03787	-61.1	-0.0807	173.	16.9	0.811
240.0	0.03949	-52.7	-0.0685	124.	14.8	0.878
242.31	0.03994	-50.7	-0.0656	113.	14.3	0.900
COEXISTING VAPOR (x=.0668)						
242.31	0.2099	28.1	0.0437	32.0	1.373	0.854

VAPOR

COEXISTING LIQUID (x=.1455)						
245.97	0.03971	-51.7	-0.0635	115.	14.4	0.891
245.97	0.2091	27.7	0.0457	31.8	1.368	0.855
250.0	0.2163	31.0	0.0504	35.6	1.299	0.808
260.0	0.2319	38.7	0.0612	44.0	1.166	0.737
270.0	0.2453	45.9	0.0711	51.1	1.070	0.698
280.0	0.2574	52.7	0.0804	57.4	0.994	0.674
290.0	0.2685	59.4	0.0894	63.1	0.933	0.658
300.0	0.2789	65.9	0.0980	68.4	0.882	0.648
310.0	0.2887	72.4	0.1065	73.3	0.838	0.640
320.0	0.2980	78.8	0.1147	78.0	0.800	0.636
330.0	0.3070	85.1	0.1228	82.4	0.767	0.633
340.0	0.3157	91.5	0.1308	86.6	0.738	0.632
350.0	0.3241	97.8	0.1386	90.6	0.711	0.631
360.0	0.3322	104.1	0.1464	94.5	0.687	0.631
370.0	0.3402	110.4	0.1540	98.2	0.666	0.633
380.0	0.3479	116.8	0.1616	101.9	0.646	0.634
390.0	0.3556	123.1	0.1691	105.4	0.628	0.636
400.0	0.3630	129.5	0.1766	108.9	0.611	0.638
420.0	0.3776	142.3	0.1913	115.5	0.580	0.644
440.0	0.3918	155.3	0.2059	121.9	0.554	0.650
460.0	0.4056	168.3	0.2203	128.0	0.530	0.657
480.0	0.4191	181.5	0.2345	134.0	0.509	0.664
500.0	0.4323	194.9	0.2485	139.8	0.490	0.672
520.0	0.4453	208.4	0.2625	145.4	0.473	0.679
540.0	0.4582	222.0	0.2763	150.9	0.457	0.687
560.0	0.4708	235.9	0.2899	156.3	0.443	0.695
580.0	0.4834	249.8	0.3035	161.6	0.429	0.703
600.0	0.4957	264.0	0.3170	166.9	0.416	0.711

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 380 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02531	-223.3	-0.3736	2066.	70.4	0.493
-20.0	0.02576	-213.3	-0.3503	1900.	66.1	0.507
0.0	0.02624	-203.1	-0.3276	1732.	61.8	0.518
20.0	0.02675	-192.6	-0.3054	1564.	57.5	0.529
40.0	0.02729	-181.9	-0.2836	1400.	53.3	0.541
60.0	0.02788	-170.9	-0.2621	1241.	49.2	0.555
80.0	0.02853	-159.7	-0.2408	1089.	45.1	0.570
100.0	0.02923	-148.1	-0.2198	944.	41.1	0.586
120.0	0.03002	-136.2	-0.1989	807.	37.3	0.605
140.0	0.03091	-123.9	-0.1780	678.	33.5	0.625
160.0	0.03193	-111.1	-0.1571	556.	29.8	0.649
180.0	0.03313	-97.8	-0.1360	441.	26.2	0.677
200.0	0.03459	-83.9	-0.1146	333.	22.7	0.712
210.0	0.03547	-76.7	-0.1037	281.	20.9	0.735
220.0	0.03648	-69.2	-0.0926	231.	19.0	0.764
230.0	0.03770	-61.4	-0.0812	182.	17.1	0.803
240.0	0.03924	-53.0	-0.0692	133.	15.2	0.862
248.03	0.04089	-45.8	-0.0589	94.	13.4	0.945
COEXISTING VAPOR (x=.0685)						
248.03	0.1938	28.7	0.0436	28.6	1.514	0.916
VAPOR						
COEXISTING LIQUID (x=.1425)						
251.51	0.04066	-46.7	-0.0569	97.	13.5	0.934
251.51	0.1931	28.3	0.0455	28.5	1.508	0.917
260.0	0.2080	35.5	0.0557	36.8	1.347	0.805
270.0	0.2226	43.2	0.0663	44.9	1.214	0.740
280.0	0.2353	50.5	0.0761	51.9	1.116	0.703
290.0	0.2467	57.4	0.0854	58.1	1.039	0.680
300.0	0.2572	64.1	0.0943	63.8	0.976	0.664
310.0	0.2670	70.7	0.1030	69.1	0.924	0.654
320.0	0.2764	77.2	0.1114	74.0	0.878	0.647
330.0	0.2853	83.7	0.1196	78.7	0.839	0.643
340.0	0.2938	90.1	0.1277	83.1	0.805	0.640
350.0	0.3021	96.5	0.1356	87.3	0.774	0.638
360.0	0.3101	102.9	0.1434	91.4	0.747	0.638
370.0	0.3178	109.3	0.1512	95.3	0.722	0.638
380.0	0.3254	115.7	0.1588	99.0	0.699	0.639
390.0	0.3328	122.1	0.1664	102.7	0.679	0.641
400.0	0.3401	128.5	0.1739	106.3	0.660	0.642
420.0	0.3542	141.4	0.1887	113.1	0.626	0.647
440.0	0.3679	154.4	0.2034	119.7	0.596	0.653
460.0	0.3812	167.5	0.2178	126.0	0.570	0.660
480.0	0.3942	180.8	0.2320	132.1	0.546	0.666
500.0	0.4070	194.1	0.2461	138.0	0.525	0.674
520.0	0.4195	207.7	0.2601	143.8	0.506	0.681
540.0	0.4318	221.4	0.2740	149.4	0.489	0.689
560.0	0.4440	235.2	0.2877	154.9	0.473	0.696
580.0	0.4560	249.3	0.3013	160.3	0.458	0.704
600.0	0.4678	263.4	0.3148	165.6	0.444	0.712

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 400 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02530	-223.2	-0.3737	2075.	70.6	0.493
-20.0	0.02575	-213.2	-0.3504	1909.	66.3	0.507
0.0	0.02623	-203.0	-0.3277	1740.	62.0	0.518
20.0	0.02674	-192.6	-0.3055	1572.	57.7	0.529
40.0	0.02728	-181.9	-0.2837	1407.	53.5	0.541
60.0	0.02787	-170.9	-0.2622	1248.	49.3	0.554
80.0	0.02851	-159.6	-0.2410	1096.	45.3	0.569
100.0	0.02922	-148.1	-0.2199	951.	41.3	0.586
120.0	0.03000	-136.2	-0.1990	814.	37.4	0.604
140.0	0.03088	-123.9	-0.1782	685.	33.7	0.625
160.0	0.03189	-111.1	-0.1573	563.	30.0	0.648
180.0	0.03308	-97.9	-0.1363	448.	26.4	0.675
200.0	0.03452	-84.0	-0.1149	341.	22.9	0.710
210.0	0.03538	-76.8	-0.1041	289.	21.1	0.732
220.0	0.03637	-69.3	-0.0930	239.	19.3	0.759
230.0	0.03755	-61.5	-0.0817	190.	17.4	0.796
240.0	0.03902	-53.3	-0.0698	142.	15.5	0.849
250.0	0.04100	-44.4	-0.0572	95.	13.4	0.943
253.53	0.04193	-41.0	-0.0523	78.	12.5	1.001
COEXISTING VAPOR (x=.0702)						
253.53	0.1789	29.0	0.0433	25.2	1.669	0.995
			VAPOR			
COEXISTING LIQUID (x=.1394)						
256.83	0.04170	-41.8	-0.0505	80.	12.6	0.988
256.83	0.1783	28.7	0.0451	25.1	1.663	0.994
260.0	0.1846	31.7	0.0494	28.7	1.579	0.922
270.0	0.2011	40.3	0.0611	38.3	1.388	0.800
280.0	0.2147	48.0	0.0716	46.2	1.257	0.741
290.0	0.2266	55.2	0.0813	53.0	1.159	0.707
300.0	0.2374	62.2	0.0906	59.2	1.081	0.685
310.0	0.2473	68.9	0.0994	64.8	1.017	0.670
320.0	0.2567	75.6	0.1080	70.0	0.963	0.660
330.0	0.2655	82.2	0.1164	75.0	0.917	0.653
340.0	0.2740	88.7	0.1246	79.6	0.877	0.649
350.0	0.2822	95.2	0.1326	84.0	0.841	0.646
360.0	0.2900	101.6	0.1405	88.2	0.810	0.645
370.0	0.2977	108.1	0.1484	92.3	0.781	0.644
380.0	0.3051	114.5	0.1561	96.2	0.756	0.644
390.0	0.3123	121.0	0.1637	100.0	0.732	0.645
400.0	0.3194	127.4	0.1713	103.7	0.711	0.647
420.0	0.3331	140.4	0.1862	110.8	0.672	0.651
440.0	0.3464	153.5	0.2009	117.5	0.639	0.656
460.0	0.3593	166.7	0.2154	124.0	0.610	0.662
480.0	0.3719	180.0	0.2297	130.2	0.585	0.669
500.0	0.3842	193.4	0.2439	136.3	0.561	0.676
520.0	0.3962	207.0	0.2579	142.1	0.541	0.683
540.0	0.4081	220.7	0.2717	147.9	0.521	0.690
560.0	0.4198	234.6	0.2855	153.5	0.504	0.698
580.0	0.4313	248.7	0.2991	159.0	0.488	0.705
600.0	0.4427	262.8	0.3126	164.4	0.473	0.713

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 420 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02530	-223.2	-0.3737	2084.	70.9	0.493
-20.0	0.02575	-213.2	-0.3505	1917.	66.5	0.507
0.0	0.02622	-203.0	-0.3278	1748.	62.2	0.518
20.0	0.02673	-192.5	-0.3056	1579.	57.9	0.529
40.0	0.02727	-181.8	-0.2838	1415.	53.6	0.541
60.0	0.02786	-170.9	-0.2623	1255.	49.5	0.554
80.0	0.02850	-159.6	-0.2411	1103.	45.4	0.569
100.0	0.02920	-148.0	-0.2201	958.	41.4	0.585
120.0	0.02998	-136.1	-0.1992	821.	37.6	0.604
140.0	0.03085	-123.8	-0.1783	692.	33.8	0.624
160.0	0.03186	-111.1	-0.1575	570.	30.2	0.647
180.0	0.03303	-97.9	-0.1365	456.	26.6	0.674
200.0	0.03445	-84.1	-0.1152	348.	23.1	0.708
210.0	0.03529	-76.9	-0.1044	297.	21.3	0.729
220.0	0.03626	-69.5	-0.0934	247.	19.5	0.755
230.0	0.03740	-61.7	-0.0821	199.	17.7	0.789
240.0	0.03881	-53.6	-0.0704	151.	15.8	0.837
250.0	0.04066	-44.9	-0.0580	104.	13.7	0.918
258.83	0.04308	-36.1	-0.0458	63.	11.7	1.073
COEXISTING VAPOR (x=.0721)						
258.83	0.1651	29.2	0.0427	21.8	1.841	1.097
			VAPOR			
COEXISTING LIQUID (x=.1363)						
261.93	0.04285	-36.9	-0.0441	65.	11.7	1.057
261.93	0.1646	28.9	0.0445	21.8	1.834	1.095
270.0	0.1802	36.8	0.0554	31.0	1.605	0.896
280.0	0.1952	45.2	0.0668	40.0	1.424	0.794
290.0	0.2079	52.8	0.0771	47.7	1.296	0.741
300.0	0.2190	60.1	0.0867	54.4	1.198	0.709
310.0	0.2292	67.1	0.0958	60.4	1.120	0.689
320.0	0.2387	73.9	0.1046	66.0	1.056	0.675
330.0	0.2476	80.6	0.1132	71.2	1.001	0.665
340.0	0.2560	87.2	0.1215	76.1	0.954	0.659
350.0	0.2641	93.8	0.1297	80.7	0.913	0.655
360.0	0.2718	100.3	0.1377	85.1	0.876	0.652
370.0	0.2793	106.9	0.1456	89.3	0.844	0.651
380.0	0.2866	113.4	0.1534	93.4	0.815	0.650
390.0	0.2937	119.9	0.1611	97.3	0.788	0.651
400.0	0.3006	126.4	0.1687	101.1	0.764	0.651
420.0	0.3140	139.4	0.1837	108.4	0.721	0.655
440.0	0.3269	152.6	0.1985	115.3	0.684	0.659
460.0	0.3395	165.8	0.2131	122.0	0.652	0.665
480.0	0.3516	179.2	0.2274	128.3	0.624	0.671
500.0	0.3635	192.7	0.2416	134.5	0.598	0.678
520.0	0.3752	206.3	0.2557	140.5	0.576	0.685
540.0	0.3867	220.1	0.2696	146.4	0.555	0.692
560.0	0.3979	234.0	0.2834	152.1	0.536	0.699
580.0	0.4091	248.1	0.2970	157.7	0.518	0.707
600.0	0.4200	262.3	0.3106	163.2	0.502	0.714

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 440 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02529	-223.1	-0.3738	2093.	71.1	0.493
-20.0	0.02574	-213.1	-0.3506	1926.	66.7	0.506
0.0	0.02621	-202.9	-0.3279	1756.	62.4	0.518
20.0	0.02672	-192.5	-0.3057	1587.	58.1	0.529
40.0	0.02726	-181.8	-0.2839	1422.	53.8	0.541
60.0	0.02784	-170.8	-0.2624	1263.	49.6	0.554
80.0	0.02848	-159.6	-0.2412	1110.	45.6	0.569
100.0	0.02918	-148.0	-0.2202	965.	41.6	0.585
120.0	0.02996	-136.1	-0.1993	828.	37.8	0.603
140.0	0.03083	-123.8	-0.1785	699.	34.0	0.623
160.0	0.03182	-111.1	-0.1577	577.	30.4	0.646
180.0	0.03298	-97.9	-0.1367	463.	26.8	0.672
200.0	0.03438	-84.1	-0.1155	356.	23.3	0.705
210.0	0.03521	-77.0	-0.1048	304.	21.5	0.726
220.0	0.03615	-69.6	-0.0938	255.	19.7	0.751
230.0	0.03726	-61.9	-0.0826	207.	17.9	0.783
240.0	0.03861	-53.9	-0.0710	160.	16.1	0.827
250.0	0.04036	-45.3	-0.0588	114.	14.1	0.898
260.0	0.04290	-35.6	-0.0453	68.	11.9	1.045
263.95	0.04438	-31.3	-0.0393	49.	10.9	1.172
COEXISTING VAPOR (x=.0740)						
263.95	0.15199	29.0	0.0418	18.4	2.04	1.236
			VAPOR			
COEXISTING LIQUID (x=.1332)						
266.83	0.04415	-31.9	-0.0377	51.	10.9	1.151
266.83	0.15161	28.7	0.0435	18.4	2.03	1.232
270.0	0.15889	32.4	0.0485	22.7	1.90	1.079
280.0	0.17651	42.0	0.0615	33.5	1.63	0.872
290.0	0.19025	50.2	0.0726	42.0	1.46	0.786
300.0	0.20198	57.8	0.0827	49.4	1.33	0.740
310.0	0.2125	65.1	0.0922	55.9	1.234	0.711
320.0	0.2221	72.1	0.1013	61.9	1.156	0.692
330.0	0.2310	79.0	0.1100	67.4	1.092	0.679
340.0	0.2395	85.7	0.1185	72.5	1.037	0.670
350.0	0.2475	92.4	0.1268	77.3	0.989	0.664
360.0	0.2552	99.0	0.1349	81.9	0.947	0.660
370.0	0.2626	105.6	0.1429	86.3	0.910	0.658
380.0	0.2698	112.2	0.1508	90.5	0.877	0.656
390.0	0.2768	118.8	0.1585	94.6	0.847	0.656
400.0	0.2835	125.3	0.1662	98.5	0.820	0.656
420.0	0.2966	138.5	0.1813	106.0	0.772	0.659
440.0	0.3092	151.7	0.1962	113.2	0.731	0.663
460.0	0.3214	165.0	0.2108	120.0	0.695	0.668
480.0	0.3332	178.4	0.2252	126.5	0.664	0.674
500.0	0.3448	191.9	0.2395	132.8	0.636	0.680
520.0	0.3561	205.6	0.2536	138.9	0.611	0.687
540.0	0.3672	219.4	0.2675	144.9	0.589	0.694
560.0	0.3781	233.4	0.2814	150.7	0.568	0.701
580.0	0.3888	247.4	0.2950	156.4	0.549	0.708
600.0	0.3994	261.7	0.3086	162.0	0.532	0.716

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 460 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	.02529	-223.1	-.3739	2102.	71.3	.493
-20.0	.02573	-213.1	-.3507	1934.	66.9	.506
.0	.02620	-202.8	-.3280	1764.	62.6	.517
20.0	.02671	-192.4	-.3058	1595.	58.2	.528
40.0	.02725	-181.7	-.2840	1429.	54.0	.540
60.0	.02783	-170.8	-.2625	1270.	49.8	.554
80.0	.02847	-159.5	-.2413	1117.	45.7	.568
100.0	.02916	-148.0	-.2203	972.	41.8	.585
120.0	.02993	-136.1	-.1995	835.	37.9	.603
140.0	.03080	-123.8	-.1787	706.	34.2	.623
160.0	.03178	-111.1	-.1579	584.	30.5	.645
180.0	.03293	-98.0	-.1370	470.	27.0	.671
200.0	.03431	-84.2	-.1158	363.	23.5	.703
210.0	.03512	-77.1	-.1051	312.	21.7	.723
220.0	.03605	-69.7	-.0942	263.	20.0	.747
230.0	.03713	-62.1	-.0830	215.	18.2	.777
240.0	.03843	-54.1	-.0716	168.	16.4	.818
250.0	.04008	-45.6	-.0595	123.	14.4	.880
260.0	.04239	-36.3	-.0465	78.	12.3	.998
268.90	.04590	-26.3	-.0326	37.	10.0	1.314
COEXISTING VAPOR (x=.0762)						
268.90	.13947	28.5	.0406	15.0	2.26	1.437

VAPOR

COEXISTING LIQUID (x=.1298)						
271.55	.04566	-26.9	-.0312	39.	10.1	1.286
271.55	.13919	28.3	.0421	15.1	2.25	1.430
280.0	.15786	38.1	.0555	26.3	1.88	1.002
290.0	.17338	47.3	.0678	36.1	1.64	.850
300.0	.18595	55.4	.0785	44.2	1.48	.779
310.0	.1969	63.0	.0885	51.3	1.362	.738
320.0	.2067	70.2	.0978	57.7	1.267	.712
330.0	.2158	77.3	.1068	63.5	1.190	.695
340.0	.2243	84.1	.1154	68.9	1.125	.683
350.0	.2323	90.9	.1239	74.0	1.070	.675
360.0	.2400	97.7	.1321	78.8	1.022	.669
370.0	.2473	104.3	.1402	83.3	.980	.665
380.0	.2544	111.0	.1482	87.7	.942	.663
390.0	.2613	117.6	.1560	91.9	.908	.662
400.0	.2679	124.2	.1638	96.0	.878	.662
420.0	.2808	137.5	.1790	103.7	.824	.663
440.0	.2931	150.8	.1939	111.0	.779	.666
460.0	.3049	164.1	.2086	118.0	.740	.671
480.0	.3165	177.6	.2231	124.7	.706	.676
500.0	.3277	191.2	.2374	131.1	.675	.682
520.0	.3386	204.9	.2516	137.4	.648	.689
540.0	.3494	218.7	.2655	143.4	.624	.696
560.0	.3599	232.7	.2794	149.4	.601	.703
580.0	.3703	246.8	.2931	155.1	.581	.710
600.0	.3806	261.1	.3067	160.8	.562	.717

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 480 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02528	-223.0	-0.3740	2111.	71.5	0.493
-20.0	0.02572	-213.0	-0.3508	1943.	67.1	0.506
0.0	0.02620	-202.8	-0.3281	1772.	62.8	0.517
20.0	0.02670	-192.4	-0.3059	1602.	58.4	0.528
40.0	0.02724	-181.7	-0.2841	1437.	54.1	0.540
60.0	0.02782	-170.7	-0.2626	1277.	50.0	0.553
80.0	0.02845	-159.5	-0.2414	1124.	45.9	0.568
100.0	0.02914	-147.9	-0.2205	979.	41.9	0.584
120.0	0.02991	-136.1	-0.1996	842.	38.1	0.602
140.0	0.03077	-123.8	-0.1789	713.	34.3	0.622
160.0	0.03175	-111.1	-0.1581	591.	30.7	0.644
180.0	0.03289	-98.0	-0.1372	477.	27.2	0.670
200.0	0.03425	-84.3	-0.1161	370.	23.7	0.701
210.0	0.03504	-77.1	-0.1054	320.	21.9	0.720
220.0	0.03595	-69.8	-0.0945	271.	20.2	0.743
230.0	0.03700	-62.2	-0.0835	223.	18.4	0.772
240.0	0.03826	-54.3	-0.0721	177.	16.6	0.810
250.0	0.03983	-46.0	-0.0602	132.	14.7	0.865
260.0	0.04196	-36.8	-0.0475	88.	12.7	0.964
270.0	0.04544	-26.1	-0.0327	44.	10.3	1.226
273.69	0.04773	-21.1	-0.0258	27.	9.2	1.537
COEXISTING VAPOR (x=.0786)						
273.69	0.12725	27.5	0.0388	11.6	2.52	1.755
			VAPOR			
COEXISTING LIQUID (x=.1262)						
276.07	0.04748	-21.6	-0.0246	28.	9.2	1.496
276.07	0.12707	27.4	0.0402	11.7	2.51	1.741
280.0	0.13813	33.1	0.0480	18.0	2.24	1.278
290.0	0.15687	43.9	0.0624	29.8	1.87	0.946
300.0	0.17068	52.7	0.0741	38.8	1.66	0.831
310.0	0.1822	60.7	0.0846	46.5	1.505	0.772
320.0	0.1924	68.2	0.0943	53.4	1.390	0.736
330.0	0.2017	75.5	0.1035	59.6	1.297	0.713
340.0	0.2102	82.5	0.1124	65.3	1.221	0.697
350.0	0.2183	89.4	0.1210	70.6	1.157	0.686
360.0	0.2259	96.3	0.1294	75.6	1.102	0.679
370.0	0.2332	103.0	0.1376	80.4	1.054	0.673
380.0	0.2402	109.7	0.1456	84.9	1.011	0.670
390.0	0.2470	116.4	0.1535	89.2	0.973	0.668
400.0	0.2536	123.1	0.1614	93.4	0.939	0.667
420.0	0.2662	136.5	0.1767	101.4	0.879	0.667
440.0	0.2782	149.8	0.1917	108.9	0.829	0.670
460.0	0.2898	163.3	0.2065	116.0	0.786	0.674
480.0	0.3011	176.8	0.2210	122.9	0.749	0.679
500.0	0.3120	190.4	0.2354	129.4	0.716	0.685
520.0	0.3226	204.2	0.2496	135.8	0.686	0.691
540.0	0.3331	218.1	0.2636	142.0	0.659	0.697
560.0	0.3433	232.1	0.2775	148.0	0.635	0.704
580.0	0.3534	246.2	0.2912	153.9	0.613	0.711
600.0	0.3633	260.6	0.3049	159.7	0.593	0.718

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 500 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02527	-222.9	-0.3741	2120.1	71.77	0.493
-20.0	0.02572	-212.9	-0.3508	1951.0	67.35	0.506
0.0	0.02619	-202.7	-0.3282	1779.6	62.94	0.517
20.0	0.02669	-192.3	-0.3060	1609.7	58.58	0.528
40.0	0.02723	-181.6	-0.2842	1443.9	54.30	0.540
60.0	0.02781	-170.7	-0.2627	1284.0	50.11	0.553
80.0	0.02844	-159.5	-0.2416	1131.2	46.03	0.568
100.0	0.02913	-147.9	-0.2206	986.0	42.06	0.584
120.0	0.02989	-136.0	-0.1998	848.7	38.21	0.602
140.0	0.03074	-123.8	-0.1790	719.5	34.48	0.621
160.0	0.03171	-111.1	-0.1583	598.0	30.86	0.643
180.0	0.03284	-98.0	-0.1374	484.2	27.33	0.668
200.0	0.03418	-84.3	-0.1164	377.8	23.86	0.699
210.0	0.03497	-77.2	-0.1057	327.1	22.13	0.718
220.0	0.03586	-69.9	-0.0949	278.2	20.41	0.740
230.0	0.03688	-62.4	-0.0839	230.8	18.66	0.767
240.0	0.03809	-54.5	-0.0726	185.0	16.89	0.802
250.0	0.03959	-46.3	-0.0608	140.5	15.05	0.853
260.0	0.04158	-37.3	-0.0484	97.2	13.09	0.936
270.0	0.04460	-27.2	-0.0343	54.4	10.87	1.125
278.35	0.05006	-15.6	-0.0185	17.2	8.33	1.937
COEXISTING VAPOR (x=.0815)						
278.35	0.11494	25.9	0.0362	8.3	2.85	2.328
			VAPOR			
COEXISTING LIQUID (x=.1221)						
280.40	0.04980	-16.0	-0.0175	18.2	8.37	1.870
280.40	0.11486	25.8	0.0374	8.4	2.84	2.299
290.0	0.14016	39.7	0.0562	22.9	2.17	1.110
300.0	0.15591	49.6	0.0693	33.2	1.86	0.903
310.0	0.16832	58.2	0.0805	41.7	1.67	0.814
320.0	0.17896	66.1	0.0907	49.0	1.53	0.765
330.0	0.18846	73.6	0.1002	55.6	1.41	0.734
340.0	0.19717	80.8	0.1093	61.6	1.33	0.713
350.0	0.20528	87.9	0.1181	67.2	1.25	0.699
360.0	0.21293	94.8	0.1266	72.4	1.19	0.689
370.0	0.22020	101.7	0.1349	77.4	1.13	0.682
380.0	0.22717	108.5	0.1431	82.1	1.08	0.678
390.0	0.23387	115.3	0.1511	86.6	1.04	0.675
400.0	0.24035	122.0	0.1590	90.9	1.00	0.673
420.0	0.2528	135.4	0.1744	99.1	0.936	0.672
440.0	0.2646	148.9	0.1896	106.8	0.881	0.674
460.0	0.2759	162.4	0.2044	114.1	0.834	0.677
480.0	0.2869	176.0	0.2190	121.1	0.793	0.682
500.0	0.2975	189.7	0.2334	127.8	0.757	0.687
520.0	0.3079	203.5	0.2477	134.3	0.725	0.693
540.0	0.3181	217.4	0.2617	140.6	0.696	0.699
560.0	0.3280	231.4	0.2756	146.7	0.670	0.706
580.0	0.3378	245.6	0.2894	152.7	0.646	0.713
600.0	0.3474	260.0	0.3031	158.5	0.624	0.720

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

LIQUID, P = 520 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02527	-222.9	-0.3741	2129.1	71.99	0.493
-20.0	0.02571	-212.9	-0.3509	1959.4	67.55	0.506
0.0	0.02618	-202.7	-0.3283	1787.5	63.13	0.517
20.0	0.02668	-192.3	-0.3061	1617.2	58.75	0.528
40.0	0.02722	-181.6	-0.2843	1451.2	54.46	0.540
60.0	0.02779	-170.6	-0.2629	1291.1	50.26	0.553
80.0	0.02842	-159.4	-0.2417	1138.2	46.18	0.568
100.0	0.02911	-147.9	-0.2207	992.9	42.21	0.584
120.0	0.02987	-136.0	-0.1999	855.6	38.37	0.601
140.0	0.03072	-123.8	-0.1792	726.3	34.64	0.621
160.0	0.03168	-111.1	-0.1585	605.0	31.02	0.642
180.0	0.03279	-98.0	-0.1377	491.3	27.50	0.667
200.0	0.03412	-84.4	-0.1166	385.0	24.05	0.697
210.0	0.03489	-77.3	-0.1060	334.5	22.33	0.715
220.0	0.03576	-70.0	-0.0952	285.8	20.62	0.736
230.0	0.03676	-62.5	-0.0843	238.6	18.90	0.762
240.0	0.03794	-54.7	-0.0731	193.1	17.15	0.795
250.0	0.03937	-46.5	-0.0615	149.0	15.34	0.841
260.0	0.04124	-37.8	-0.0492	106.3	13.44	0.914
270.0	0.04393	-28.0	-0.0357	64.5	11.34	1.059
280.0	0.04931	-15.3	-0.0185	22.6	8.64	1.655
282.89	0.05335	-9.3	-0.0103	9.4	7.40	2.839
COEXISTING VAPOR (x=.0852)						
282.89	0.10179	23.1	0.0321	5.0	3.28	3.646
			VAPOR			
COEXISTING LIQUID (x=.1170)						
284.52	0.05306	-9.7	-0.0096	10.0	7.44	2.703
284.52	0.10182	23.1	0.0332	5.1	3.27	3.568
290.0	0.12212	34.3	0.0483	15.3	2.59	1.467
300.0	0.14136	46.1	0.0640	27.3	2.12	1.012
310.0	0.15500	55.5	0.0762	36.7	1.86	0.870
320.0	0.16625	63.8	0.0869	44.6	1.68	0.800
330.0	0.17608	71.6	0.0968	51.6	1.54	0.759
340.0	0.18497	79.0	0.1062	57.9	1.44	0.732
350.0	0.19317	86.3	0.1152	63.8	1.35	0.714
360.0	0.20086	93.3	0.1239	69.2	1.28	0.701
370.0	0.20812	100.3	0.1323	74.4	1.21	0.692
380.0	0.21505	107.2	0.1406	79.3	1.16	0.686
390.0	0.22170	114.0	0.1487	83.9	1.11	0.682
400.0	0.22811	120.8	0.1566	88.4	1.07	0.679
420.0	0.2404	134.4	0.1722	96.8	0.995	0.677
440.0	0.2520	147.9	0.1875	104.7	0.935	0.678
460.0	0.2631	161.5	0.2024	112.2	0.883	0.680
480.0	0.2738	175.2	0.2171	119.3	0.838	0.684
500.0	0.2842	188.9	0.2315	126.2	0.799	0.689
520.0	0.2943	202.7	0.2458	132.8	0.764	0.695
540.0	0.3042	216.7	0.2599	139.2	0.733	0.701
560.0	0.3139	230.8	0.2739	145.4	0.705	0.707
580.0	0.3234	245.0	0.2877	151.5	0.680	0.714
600.0	0.3328	259.4	0.3014	157.4	0.656	0.721

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 540 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-20.0	0.02570	-212.8	-0.3510	1968.	67.8	0.506
0.0	0.02617	-202.6	-0.3283	1795.	63.3	0.517
20.0	0.02667	-192.2	-0.3062	1625.	58.9	0.528
40.0	0.02721	-181.5	-0.2844	1458.	54.6	0.540
60.0	0.02778	-170.6	-0.2630	1298.	50.4	0.553
80.0	0.02841	-159.4	-0.2418	1145.	46.3	0.567
100.0	0.02909	-147.8	-0.2209	1000.	42.4	0.583
110.0	0.02946	-142.0	-0.2105	930.	40.4	0.592
120.0	0.02985	-136.0	-0.2001	862.	38.5	0.601
130.0	0.03026	-129.9	-0.1897	797.	36.6	0.610
140.0	0.03069	-123.8	-0.1794	733.	34.8	0.620
150.0	0.03115	-117.5	-0.1690	672.	33.0	0.630
160.0	0.03165	-111.1	-0.1587	612.	31.2	0.641
170.0	0.03218	-104.7	-0.1483	554.	29.4	0.653
180.0	0.03275	-98.0	-0.1379	498.	27.7	0.666
190.0	0.03337	-91.3	-0.1274	444.	25.9	0.680
200.0	0.03406	-84.4	-0.1169	392.	24.2	0.695
210.0	0.03482	-77.4	-0.1063	342.	22.5	0.713
220.0	0.03567	-70.1	-0.0956	293.	20.8	0.733
230.0	0.03665	-62.7	-0.0847	246.	19.1	0.758
240.0	0.03779	-54.9	-0.0735	201.	17.4	0.789
250.0	0.03917	-46.8	-0.0620	157.	15.6	0.831
260.0	0.04093	-38.2	-0.0500	115.1	13.78	0.895
270.0	0.0434	-28.7	-0.0369	74.1	11.77	1.012
280.0	0.0476	-17.2	-0.0213	34.1	9.37	1.352
* 290.0	0.0987	25.1	0.0355	6.2	3.37	3.038
300.0	0.1266	41.9	0.0577	21.2	2.44	1.192
310.0	0.1421	52.4	0.0715	31.5	2.08	0.947
320.0	0.1541	61.3	0.0830	40.1	1.85	0.844
330.0	0.1644	69.4	0.0933	47.5	1.69	0.788
340.0	0.1735	77.2	0.1030	54.2	1.56	0.753
350.0	0.1819	84.6	0.1122	60.4	1.46	0.730
360.0	0.1896	91.8	0.1211	66.1	1.37	0.714
370.0	0.1969	98.9	0.1297	71.4	1.30	0.703
380.0	0.2038	105.9	0.1381	76.5	1.24	0.695
390.0	0.2104	112.8	0.1463	81.3	1.19	0.689
400.0	0.2168	119.7	0.1543	85.9	1.14	0.686
420.0	0.2289	133.4	0.1700	94.5	1.06	0.682
440.0	0.2403	147.0	0.1854	102.6	0.99	0.682
460.0	0.2512	160.6	0.2004	110.3	0.93	0.684
480.0	0.2617	174.3	0.2151	117.6	0.88	0.687
500.0	0.2719	188.1	0.2296	124.5	0.84	0.692
520.0	0.2818	202.0	0.2440	131.3	0.80	0.697
540.0	0.2914	216.0	0.2581	137.8	0.77	0.703
560.0	0.3009	230.2	0.2721	144.1	0.74	0.709
580.0	0.3101	244.4	0.2860	150.3	0.71	0.716
600.0	0.3193	258.8	0.2997	156.3	0.69	0.722

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 560 PSIA

	T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
	-40.0	0.02525	-222.8	-0.3743	2147.	72.4	0.492
	-20.0	0.02570	-212.8	-0.3511	1976.	68.0	0.506
	0.0	0.02616	-202.6	-0.3284	1803.	63.5	0.517
	20.0	0.02666	-192.2	-0.3063	1632.	59.1	0.528
	40.0	0.02720	-181.5	-0.2845	1466.	54.8	0.539
	60.0	0.02777	-170.5	-0.2631	1305.	50.6	0.552
	80.0	0.02839	-159.3	-0.2419	1152.	46.5	0.567
	100.0	0.02907	-147.8	-0.2210	1007.	42.5	0.583
	110.0	0.02944	-141.9	-0.2106	937.	40.6	0.591
	120.0	0.02983	-136.0	-0.2002	869.	38.7	0.600
	130.0	0.03023	-129.9	-0.1899	804.	36.8	0.610
	140.0	0.03066	-123.8	-0.1795	740.	34.9	0.619
	150.0	0.03112	-117.5	-0.1692	678.	33.1	0.630
	160.0	0.03161	-111.1	-0.1588	619.	31.3	0.641
	170.0	0.03214	-104.7	-0.1485	561.	29.6	0.652
	180.0	0.03271	-98.1	-0.1381	505.	27.8	0.665
	190.0	0.03332	-91.3	-0.1277	451.	26.1	0.679
	200.0	0.03400	-84.5	-0.1172	399.	24.4	0.694
	210.0	0.03475	-77.4	-0.1066	349.	22.7	0.711
	220.0	0.03559	-70.2	-0.0959	301.	21.0	0.731
	230.0	0.03654	-62.8	-0.0851	254.	19.3	0.754
	240.0	0.03765	-55.1	-0.0740	209.	17.6	0.783
	250.0	0.03898	-47.1	-0.0626	166.	15.9	0.822
	260.0	0.0406	-38.6	-0.0507	123.7	14.09	0.879
	270.0	0.0429	-29.3	-0.0379	83.4	12.16	0.977
	280.0	0.0465	-18.6	-0.0233	44.5	9.96	1.207
*	290.0	0.0572	-1.2	0.0000	7.1	6.65	3.376
	300.0	0.1108	36.4	0.0500	14.7	2.89	1.548
	310.0	0.1294	48.9	0.0663	26.3	2.35	1.057
	320.0	0.1425	58.6	0.0788	35.5	2.05	0.901
	330.0	0.1533	67.2	0.0897	43.5	1.85	0.824
	340.0	0.1627	75.2	0.0998	50.5	1.70	0.778
	350.0	0.1712	82.8	0.1093	57.0	1.58	0.749
	360.0	0.1791	90.2	0.1183	62.9	1.48	0.729
	370.0	0.1864	97.4	0.1271	68.5	1.40	0.715
	380.0	0.1933	104.5	0.1356	73.7	1.33	0.705
	390.0	0.1999	111.5	0.1439	78.6	1.27	0.698
	400.0	0.2062	118.5	0.1520	83.4	1.21	0.693
	420.0	0.2182	132.3	0.1679	92.3	1.12	0.687
	440.0	0.2294	146.0	0.1833	100.6	1.05	0.686
	460.0	0.2402	159.7	0.1984	108.4	0.99	0.687
	480.0	0.2505	173.5	0.2132	115.8	0.93	0.690
	500.0	0.2604	187.4	0.2278	123.0	0.89	0.694
	520.0	0.2701	201.3	0.2422	129.8	0.85	0.699
	540.0	0.2796	215.3	0.2564	136.4	0.81	0.705
	560.0	0.2888	229.5	0.2704	142.8	0.78	0.711
	580.0	0.2978	243.8	0.2843	149.1	0.75	0.717
	600.0	0.3067	258.2	0.2980	155.2	0.72	0.724

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 580 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02525	-222.7	-0.3744	2156.	72.7	0.492
-20.0	0.02569	-212.7	-0.3512	1984.	68.2	0.506
0.0	0.02616	-202.5	-0.3285	1811.	63.7	0.517
20.0	0.02665	-192.1	-0.3064	1640.	59.3	0.528
40.0	0.02719	-181.4	-0.2846	1473.	54.9	0.539
60.0	0.02776	-170.5	-0.2632	1312.	50.7	0.552
80.0	0.02838	-159.3	-0.2421	1159.	46.6	0.567
100.0	0.02906	-147.8	-0.2211	1013.	42.7	0.582
110.0	0.02942	-141.9	-0.2107	944.	40.7	0.591
120.0	0.02981	-135.9	-0.2004	876.	38.8	0.600
130.0	0.03021	-129.9	-0.1900	810.	36.9	0.609
140.0	0.03064	-123.7	-0.1797	747.	35.1	0.619
150.0	0.03109	-117.5	-0.1694	685.	33.3	0.629
160.0	0.03158	-111.1	-0.1590	626.	31.5	0.640
170.0	0.03210	-104.7	-0.1487	568.	29.7	0.651
180.0	0.03266	-98.1	-0.1383	512.	28.0	0.664
190.0	0.03327	-91.4	-0.1279	458.	26.3	0.677
200.0	0.03394	-84.5	-0.1174	407.	24.6	0.692
210.0	0.03468	-77.5	-0.1069	356.	22.9	0.709
220.0	0.03550	-70.3	-0.0962	308.	21.2	0.728
230.0	0.03644	-62.9	-0.0854	262.	19.6	0.750
240.0	0.03751	-55.3	-0.0744	217.	17.9	0.778
250.0	0.03880	-47.3	-0.0631	174.	16.2	0.814
260.0	0.04038	-38.9	-0.0514	132.	14.4	0.866
270.0	0.04248	-29.8	-0.0389	92.	12.5	0.948
280.0	0.04561	-19.6	-0.0249	54.	10.5	1.120
290.0	0.05217	-6.0	-0.0066	18.	7.8	1.813
300.0	0.0924	28.5	0.0390	8.3	3.62	2.457
310.0	0.1166	44.8	0.0603	21.0	2.69	1.226
320.0	0.1313	55.6	0.0743	31.0	2.28	0.975
330.0	0.1428	64.7	0.0859	39.4	2.03	0.867
340.0	0.1525	73.1	0.0964	46.9	1.84	0.807
350.0	0.1613	81.0	0.1062	53.6	1.70	0.770
360.0	0.1692	88.5	0.1155	59.8	1.59	0.745
370.0	0.1766	95.9	0.1245	65.5	1.50	0.727
380.0	0.1835	103.1	0.1331	70.9	1.42	0.715
390.0	0.1901	110.2	0.1415	76.1	1.35	0.706
400.0	0.1963	117.3	0.1497	80.9	1.29	0.700
420.0	0.2082	131.2	0.1658	90.1	1.19	0.693
440.0	0.2193	145.0	0.1813	98.6	1.11	0.691
460.0	0.2299	158.8	0.1965	106.6	1.04	0.691
480.0	0.2400	172.7	0.2114	114.1	0.98	0.693
500.0	0.2498	186.6	0.2260	121.4	0.93	0.697
520.0	0.2593	200.6	0.2404	128.4	0.89	0.702
540.0	0.2685	214.7	0.2547	135.1	0.85	0.707
560.0	0.2775	228.9	0.2687	141.6	0.82	0.713
580.0	0.2863	243.2	0.2827	148.0	0.78	0.719
600.0	0.2950	257.7	0.2964	154.1	0.76	0.725

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 600 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02524	-222.6	-0.3745	2165.	72.9	0.492
-20.0	0.02568	-212.7	-0.3513	1993.	68.3	0.506
0.0	0.02615	-202.5	-0.3286	1819.	63.9	0.517
20.0	0.02665	-192.0	-0.3065	1647.	59.4	0.527
40.0	0.02718	-181.4	-0.2847	1480.	55.1	0.539
60.0	0.02775	-170.5	-0.2633	1319.	50.9	0.552
80.0	0.02837	-159.3	-0.2422	1166.	46.8	0.566
100.0	0.02904	-147.7	-0.2213	1020.	42.8	0.582
110.0	0.02940	-141.9	-0.2109	950.	40.9	0.591
120.0	0.02978	-135.9	-0.2005	883.	39.0	0.599
130.0	0.03019	-129.9	-0.1902	817.	37.1	0.609
140.0	0.03061	-123.7	-0.1798	754.	35.3	0.618
150.0	0.03107	-117.5	-0.1695	692.	33.4	0.628
160.0	0.03155	-111.1	-0.1592	632.	31.7	0.639
170.0	0.03207	-104.7	-0.1489	575.	29.9	0.650
180.0	0.03262	-98.1	-0.1385	519.	28.2	0.663
190.0	0.03323	-91.4	-0.1281	465.	26.5	0.676
200.0	0.03388	-84.6	-0.1177	414.	24.8	0.690
210.0	0.03461	-77.6	-0.1072	364.	23.1	0.707
220.0	0.03542	-70.4	-0.0966	315.	21.4	0.725
230.0	0.03633	-63.0	-0.0858	269.	19.8	0.747
240.0	0.03739	-55.4	-0.0749	224.	18.1	0.773
250.0	0.03863	-47.5	-0.0636	181.	16.4	0.807
260.0	0.04014	-39.2	-0.0520	140.	14.7	0.854
270.0	0.04210	-30.3	-0.0398	101.	12.9	0.925
280.0	0.0449	-20.5	-0.0263	64.	10.9	1.060
290.0	0.0499	-8.3	-0.0100	29.	8.6	1.445
300.0	0.0709	15.9	0.0221	5.4	4.98	3.828
310.0	0.1034	39.8	0.0533	15.9	3.12	1.499
320.0	0.1203	52.2	0.0693	26.5	2.55	1.075
330.0	0.1326	62.1	0.0820	35.4	2.23	0.921
340.0	0.1429	70.9	0.0930	43.2	2.01	0.841
350.0	0.1518	79.0	0.1031	50.2	1.84	0.794
360.0	0.1599	86.8	0.1127	56.7	1.71	0.763
370.0	0.1673	94.3	0.1218	62.6	1.60	0.742
380.0	0.1743	101.7	0.1306	68.2	1.51	0.727
390.0	0.1809	108.9	0.1391	73.5	1.44	0.716
400.0	0.1871	116.0	0.1475	78.5	1.37	0.708
420.0	0.1989	130.1	0.1637	87.9	1.26	0.699
440.0	0.2099	144.0	0.1793	96.6	1.17	0.695
460.0	0.2203	157.9	0.1946	104.7	1.10	0.695
480.0	0.2303	171.8	0.2096	112.5	1.03	0.696
500.0	0.2399	185.8	0.2243	119.9	0.98	0.700
520.0	0.2492	199.8	0.2387	126.9	0.93	0.704
540.0	0.2582	214.0	0.2530	133.8	0.89	0.709
560.0	0.2670	228.2	0.2671	140.4	0.85	0.714
580.0	0.2756	242.6	0.2811	146.8	0.82	0.720
600.0	0.2841	257.1	0.2949	153.1	0.79	0.727

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 620 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02524	-222.6	-0.3745	2174.	73.1	0.492
-20.0	0.02568	-212.6	-0.3514	2001.	68.5	0.505
0.0	0.02614	-202.4	-0.3287	1827.	64.0	0.516
20.0	0.02664	-192.0	-0.3066	1655.	59.6	0.527
40.0	0.02717	-181.3	-0.2848	1487.	55.3	0.539
60.0	0.02773	-170.4	-0.2634	1326.	51.0	0.552
80.0	0.02835	-159.2	-0.2423	1173.	46.9	0.566
100.0	0.02902	-147.7	-0.2214	1027.	43.0	0.582
110.0	0.02938	-141.8	-0.2110	957.	41.0	0.590
120.0	0.02976	-135.9	-0.2007	890.	39.1	0.599
130.0	0.03016	-129.8	-0.1903	824.	37.2	0.608
140.0	0.03059	-123.7	-0.1800	760.	35.4	0.618
150.0	0.03104	-117.5	-0.1697	699.	33.6	0.628
160.0	0.03152	-111.1	-0.1594	639.	31.8	0.638
170.0	0.03203	-104.7	-0.1491	582.	30.1	0.650
180.0	0.03258	-98.1	-0.1387	526.	28.3	0.662
190.0	0.03318	-91.4	-0.1284	472.	26.6	0.675
200.0	0.03383	-84.6	-0.1179	421.	25.0	0.689
210.0	0.03454	-77.6	-0.1075	371.	23.3	0.705
220.0	0.03534	-70.5	-0.0969	323.	21.6	0.723
230.0	0.03624	-63.1	-0.0862	276.	20.0	0.743
240.0	0.03726	-55.6	-0.0753	232.	18.3	0.769
250.0	0.03846	-47.7	-0.0641	189.	16.7	0.800
260.0	0.03992	-39.5	-0.0526	148.	15.0	0.843
270.0	0.04177	-30.8	-0.0406	109.	13.2	0.906
280.0	0.04431	-21.2	-0.0275	72.	11.3	1.016
290.0	0.04845	-9.9	-0.0124	38.2	9.2	1.272
300.0	0.05915	7.0	0.0100	10.7	6.4	2.440
310.0	0.0898	33.5	0.0446	11.7	3.72	1.933
320.0	0.1094	48.4	0.0639	22.2	2.88	1.212
330.0	0.1229	59.2	0.0777	31.5	2.46	0.987
340.0	0.1336	68.5	0.0894	39.6	2.19	0.881
350.0	0.1429	77.0	0.1000	46.9	1.99	0.821
360.0	0.1511	85.0	0.1098	53.6	1.84	0.783
370.0	0.1587	92.7	0.1191	59.8	1.72	0.757
380.0	0.1657	100.2	0.1281	65.5	1.61	0.739
390.0	0.1722	107.5	0.1368	71.0	1.53	0.726
400.0	0.1785	114.8	0.1452	76.1	1.45	0.717
420.0	0.1902	129.0	0.1616	85.7	1.33	0.705
440.0	0.2011	143.0	0.1774	94.6	1.23	0.700
460.0	0.2113	157.0	0.1927	103.0	1.15	0.699
480.0	0.2211	171.0	0.2078	110.8	1.09	0.700
500.0	0.2306	185.0	0.2225	118.3	1.03	0.702
520.0	0.2397	199.1	0.2371	125.5	0.98	0.706
540.0	0.2485	213.3	0.2514	132.5	0.93	0.711
560.0	0.2572	227.6	0.2655	139.2	0.89	0.716
580.0	0.2656	242.0	0.2795	145.7	0.86	0.722
600.0	0.2739	256.5	0.2933	152.1	0.83	0.728

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 640 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02523	-222.5	-0.3746	2182.	73.3	0.492
-20.0	0.02567	-212.5	-0.3514	2009.	68.7	0.505
0.0	0.02613	-202.3	-0.3288	1834.	64.2	0.516
20.0	0.02663	-191.9	-0.3067	1662.	59.8	0.527
40.0	0.02716	-181.3	-0.2849	1495.	55.4	0.539
60.0	0.02772	-170.4	-0.2635	1333.	51.2	0.552
80.0	0.02834	-159.2	-0.2424	1180.	47.1	0.566
100.0	0.02901	-147.7	-0.2215	1034.	43.1	0.581
110.0	0.02937	-141.8	-0.2111	964.	41.2	0.590
120.0	0.02974	-135.9	-0.2008	896.	39.3	0.598
130.0	0.03014	-129.8	-0.1905	831.	37.4	0.608
140.0	0.03056	-123.7	-0.1802	767.	35.6	0.617
150.0	0.03101	-117.5	-0.1699	705.	33.7	0.627
160.0	0.03148	-111.1	-0.1596	646.	32.0	0.638
170.0	0.03199	-104.7	-0.1493	588.	30.2	0.649
180.0	0.03254	-98.1	-0.1390	533.	28.5	0.661
190.0	0.03313	-91.5	-0.1286	479.	26.8	0.673
200.0	0.03377	-84.6	-0.1182	428.	25.1	0.687
210.0	0.03448	-77.7	-0.1077	378.	23.5	0.703
220.0	0.03526	-70.6	-0.0972	330.	21.8	0.720
230.0	0.03614	-63.2	-0.0865	284.	20.2	0.740
240.0	0.03714	-55.7	-0.0757	239.	18.5	0.764
250.0	0.03831	-47.9	-0.0646	197.	16.9	0.794
260.0	0.03971	-39.8	-0.0532	156.	15.2	0.834
270.0	0.04146	-31.2	-0.0413	118.	13.5	0.890
280.0	0.04380	-21.8	-0.0286	81.	11.7	0.982
290.0	0.04736	-11.2	-0.0143	47.3	9.7	1.168
300.0	0.05460	2.8	0.0042	18.7	7.3	1.755
310.0	0.0764	26.0	0.0345	9.6	4.53	2.357
320.0	0.0987	44.0	0.0578	18.4	3.28	1.394
330.0	0.1134	56.1	0.0732	27.8	2.73	1.070
340.0	0.1248	66.0	0.0857	36.2	2.39	0.929
350.0	0.1344	74.9	0.0967	43.7	2.16	0.852
360.0	0.1428	83.2	0.1069	50.6	1.98	0.805
370.0	0.1505	91.1	0.1165	57.0	1.84	0.774
380.0	0.1575	98.7	0.1256	62.9	1.72	0.752
390.0	0.1641	106.2	0.1344	68.5	1.63	0.737
400.0	0.1704	113.5	0.1430	73.8	1.54	0.726
420.0	0.1820	127.8	0.1595	83.6	1.41	0.712
440.0	0.1928	142.0	0.1754	92.7	1.30	0.705
460.0	0.2029	156.1	0.1909	101.2	1.21	0.703
480.0	0.2126	170.1	0.2060	109.2	1.14	0.703
500.0	0.2219	184.2	0.2208	116.9	1.08	0.705
520.0	0.2308	198.4	0.2354	124.2	1.02	0.709
540.0	0.2395	212.6	0.2498	131.2	0.98	0.713
560.0	0.2480	226.9	0.2640	138.0	0.93	0.718
580.0	0.2562	241.4	0.2780	144.6	0.90	0.724
600.0	0.2643	255.9	0.2919	151.1	0.86	0.730

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 660 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02522	-222.5	-0.3747	2191.	73.5	0.492
-20.0	0.02566	-212.5	-0.3515	2017.	68.9	0.505
0.0	0.02613	-202.3	-0.3289	1842.	64.4	0.516
20.0	0.02662	-191.9	-0.3068	1670.	59.9	0.527
40.0	0.02715	-181.2	-0.2850	1502.	55.6	0.539
60.0	0.02771	-170.3	-0.2636	1340.	51.3	0.551
80.0	0.02832	-159.1	-0.2425	1186.	47.2	0.566
100.0	0.02899	-147.6	-0.2217	1040.	43.2	0.581
110.0	0.02935	-141.8	-0.2113	971.	41.3	0.589
120.0	0.02972	-135.8	-0.2009	903.	39.4	0.598
130.0	0.03012	-129.8	-0.1906	837.	37.5	0.607
140.0	0.03054	-123.7	-0.1803	774.	35.7	0.616
150.0	0.03098	-117.4	-0.1700	712.	33.9	0.626
160.0	0.03145	-111.1	-0.1598	653.	32.1	0.637
170.0	0.03196	-104.7	-0.1495	595.	30.4	0.648
180.0	0.03250	-98.1	-0.1392	540.	28.7	0.660
190.0	0.03308	-91.5	-0.1288	486.	27.0	0.672
200.0	0.03372	-84.7	-0.1184	435.	25.3	0.686
210.0	0.03442	-77.7	-0.1080	385.	23.6	0.701
220.0	0.03519	-70.6	-0.0975	337.	22.0	0.718
230.0	0.03605	-63.3	-0.0868	291.	20.4	0.737
240.0	0.03703	-55.9	-0.0761	247.	18.8	0.760
250.0	0.03816	-48.1	-0.0651	205.	17.1	0.789
260.0	0.03951	-40.0	-0.0538	164.	15.5	0.825
270.0	0.04117	-31.5	-0.0420	126.	13.8	0.876
280.0	0.04335	-22.4	-0.0296	90.	12.0	0.954
290.0	0.04650	-12.2	-0.0159	56.	10.1	1.099
300.0	0.05207	0.3	0.0007	27.	8.0	1.458
310.0	0.06625	19.1	0.0252	11.0	5.45	2.256
320.0	0.0883	39.1	0.0510	15.5	3.77	1.610
330.0	0.1043	52.7	0.0683	24.4	3.04	1.171
340.0	0.1164	63.4	0.0818	32.9	2.62	0.985
350.0	0.1263	72.7	0.0934	40.6	2.34	0.888
360.0	0.1350	81.3	0.1039	47.7	2.13	0.830
370.0	0.1427	89.4	0.1137	54.2	1.97	0.793
380.0	0.1499	97.2	0.1231	60.3	1.84	0.767
390.0	0.1565	104.7	0.1320	66.1	1.73	0.749
400.0	0.1627	112.2	0.1407	71.5	1.64	0.735
420.0	0.1743	126.7	0.1574	81.6	1.49	0.719
440.0	0.1850	141.0	0.1735	90.8	1.37	0.711
460.0	0.1951	155.2	0.1891	99.5	1.27	0.707
480.0	0.2046	169.3	0.2043	107.7	1.20	0.706
500.0	0.2137	183.4	0.2192	115.4	1.13	0.708
520.0	0.2225	197.6	0.2338	122.9	1.07	0.711
540.0	0.2310	211.9	0.2482	130.0	1.02	0.715
560.0	0.2393	226.3	0.2625	136.9	0.97	0.720
580.0	0.2474	240.7	0.2765	143.6	0.93	0.725
600.0	0.2554	255.3	0.2904	150.1	0.90	0.731

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 680 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02522	-222.4	-0.3748	2200.	73.8	0.492
-20.0	0.02566	-212.4	-0.3516	2025.	69.1	0.505
0.0	0.02612	-202.2	-0.3290	1850.	64.6	0.516
20.0	0.02661	-191.8	-0.3068	1677.	60.1	0.527
40.0	0.02714	-181.2	-0.2851	1509.	55.7	0.538
60.0	0.02770	-170.3	-0.2637	1347.	51.5	0.551
80.0	0.02831	-159.1	-0.2427	1193.	47.4	0.565
100.0	0.02897	-147.6	-0.2218	1047.	43.4	0.581
110.0	0.02933	-141.8	-0.2114	977.	41.5	0.589
120.0	0.02970	-135.8	-0.2011	910.	39.6	0.598
130.0	0.03010	-129.8	-0.1908	844.	37.7	0.607
140.0	0.03051	-123.7	-0.1805	780.	35.8	0.616
150.0	0.03095	-117.4	-0.1702	719.	34.0	0.626
160.0	0.03142	-111.1	-0.1599	659.	32.3	0.636
170.0	0.03192	-104.7	-0.1497	602.	30.5	0.647
180.0	0.03246	-98.2	-0.1394	547.	28.8	0.659
190.0	0.03304	-91.5	-0.1291	493.	27.1	0.671
200.0	0.03367	-84.7	-0.1187	441.	25.5	0.684
210.0	0.03435	-77.8	-0.1083	392.	23.8	0.699
220.0	0.03511	-70.7	-0.0978	344.	22.2	0.716
230.0	0.03596	-63.4	-0.0872	298.	20.6	0.734
240.0	0.03692	-56.0	-0.0764	254.	19.0	0.757
250.0	0.03802	-48.3	-0.0655	212.	17.4	0.783
260.0	0.03932	-40.3	-0.0543	172.	15.7	0.817
270.0	0.04091	-31.9	-0.0427	134.	14.1	0.863
280.0	0.04295	-22.9	-0.0305	98.	12.4	0.932
290.0	0.04579	-13.0	-0.0173	65.	10.6	1.049
300.0	0.05037	-1.4	-0.0019	35.	8.6	1.296
310.0	0.06008	14.2	0.0185	15.5	6.28	1.879
320.0	0.0788	33.8	0.0439	14.0	4.36	1.787
330.0	0.0956	49.0	0.0632	21.5	3.40	1.287
340.0	0.1083	60.5	0.0777	29.9	2.87	1.049
350.0	0.1187	70.3	0.0899	37.7	2.53	0.928
360.0	0.1275	79.3	0.1009	44.9	2.29	0.858
370.0	0.1354	87.6	0.1110	51.6	2.11	0.813
380.0	0.1426	95.6	0.1205	57.8	1.96	0.782
390.0	0.1493	103.3	0.1297	63.7	1.84	0.761
400.0	0.1555	110.8	0.1385	69.2	1.73	0.746
420.0	0.1671	125.5	0.1554	79.5	1.57	0.726
440.0	0.1777	140.0	0.1716	89.0	1.44	0.716
460.0	0.1876	154.2	0.1873	97.8	1.34	0.711
480.0	0.1970	168.4	0.2026	106.1	1.25	0.710
500.0	0.2060	182.6	0.2175	114.0	1.18	0.711
520.0	0.2147	196.9	0.2322	121.5	1.12	0.714
540.0	0.2231	211.2	0.2467	128.8	1.06	0.717
560.0	0.2312	225.6	0.2610	135.8	1.02	0.722
580.0	0.2392	240.1	0.2750	142.6	0.97	0.727
600.0	0.2470	254.8	0.2890	149.2	0.93	0.733

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 700 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02521	-222.3	-0.3749	2209.	74.0	0.492
-20.0	0.02565	-212.4	-0.3517	2034.	69.3	0.505
0.0	0.02611	-202.2	-0.3291	1858.	64.7	0.516
20.0	0.02660	-191.8	-0.3069	1684.	60.3	0.527
40.0	0.02713	-181.1	-0.2852	1516.	55.9	0.538
60.0	0.02769	-170.2	-0.2639	1354.	51.6	0.551
80.0	0.02830	-159.0	-0.2428	1200.	47.5	0.565
100.0	0.02896	-147.6	-0.2219	1054.	43.5	0.580
110.0	0.02931	-141.7	-0.2116	984.	41.6	0.589
120.0	0.02968	-135.8	-0.2012	916.	39.7	0.597
130.0	0.03008	-129.8	-0.1909	851.	37.8	0.606
140.0	0.03049	-123.6	-0.1807	787.	36.0	0.615
150.0	0.03093	-117.4	-0.1704	726.	34.2	0.625
160.0	0.03139	-111.1	-0.1601	666.	32.4	0.635
170.0	0.03189	-104.7	-0.1499	609.	30.7	0.646
180.0	0.03242	-98.2	-0.1396	553.	29.0	0.658
190.0	0.03299	-91.5	-0.1293	500.	27.3	0.670
200.0	0.03362	-84.7	-0.1189	448.	25.6	0.683
210.0	0.03429	-77.8	-0.1085	399.	24.0	0.697
220.0	0.03504	-70.8	-0.0981	351.	22.4	0.714
230.0	0.03587	-63.5	-0.0875	305.	20.8	0.732
240.0	0.03681	-56.1	-0.0768	261.	19.2	0.753
250.0	0.03788	-48.4	-0.0659	220.	17.6	0.778
260.0	0.03914	-40.5	-0.0548	179.	16.0	0.810
270.0	0.04066	-32.2	-0.0433	142.	14.4	0.852
280.0	0.04258	-23.3	-0.0313	106.	12.7	0.913
290.0	0.04518	-13.8	-0.0185	73.	10.9	1.010
300.0	0.04911	-2.8	-0.0040	44.	9.1	1.194
310.0	0.05636	10.9	0.0140	21.6	6.98	1.589
320.0	0.0708	28.7	0.0370	14.5	5.00	1.823
330.0	0.0874	45.0	0.0577	19.5	3.80	1.404
340.0	0.1007	57.5	0.0734	27.2	3.16	1.121
350.0	0.1114	67.9	0.0864	35.0	2.75	0.973
360.0	0.1205	77.2	0.0978	42.3	2.47	0.888
370.0	0.1285	85.8	0.1082	49.1	2.26	0.835
380.0	0.1358	93.9	0.1180	55.4	2.09	0.799
390.0	0.1425	101.8	0.1273	61.4	1.95	0.774
400.0	0.1487	109.5	0.1362	67.1	1.84	0.756
420.0	0.1603	124.3	0.1534	77.6	1.65	0.734
440.0	0.1708	138.9	0.1697	87.2	1.52	0.722
460.0	0.1806	153.3	0.1855	96.2	1.40	0.716
480.0	0.1899	167.6	0.2009	104.6	1.31	0.714
500.0	0.1988	181.8	0.2159	112.6	1.23	0.714
520.0	0.2073	196.2	0.2307	120.3	1.17	0.716
540.0	0.2156	210.5	0.2452	127.6	1.11	0.720
560.0	0.2236	225.0	0.2595	134.7	1.06	0.724
580.0	0.2314	239.5	0.2736	141.6	1.01	0.729
600.0	0.2390	254.2	0.2876	148.2	0.97	0.734

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 750 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02520	-222.2	-0.3751	2231.	74.5	0.492
-20.0	0.02563	-212.2	-0.3519	2054.	69.8	0.505
0.0	0.02609	-202.0	-0.3293	1877.	65.2	0.516
20.0	0.02658	-191.6	-0.3072	1703.	60.7	0.526
40.0	0.02710	-181.0	-0.2855	1534.	56.3	0.538
60.0	0.02766	-170.1	-0.2641	1371.	52.0	0.550
80.0	0.02826	-158.9	-0.2431	1217.	47.9	0.564
100.0	0.02892	-147.5	-0.2222	1071.	43.9	0.580
110.0	0.02927	-141.6	-0.2119	1001.	41.9	0.588
120.0	0.02964	-135.7	-0.2016	933.	40.0	0.596
130.0	0.03002	-129.7	-0.1913	867.	38.2	0.605
140.0	0.03043	-123.6	-0.1810	803.	36.4	0.614
150.0	0.03086	-117.4	-0.1708	742.	34.6	0.624
160.0	0.03132	-111.1	-0.1606	683.	32.8	0.634
170.0	0.03180	-104.7	-0.1503	625.	31.1	0.644
180.0	0.03233	-98.2	-0.1401	570.	29.4	0.655
190.0	0.03289	-91.6	-0.1298	517.	27.7	0.667
200.0	0.03349	-84.8	-0.1195	465.	26.0	0.680
210.0	0.03415	-78.0	-0.1092	416.	24.4	0.693
220.0	0.03487	-70.9	-0.0988	368.	22.8	0.709
230.0	0.03566	-63.8	-0.0883	323.	21.2	0.725
240.0	0.03656	-56.4	-0.0777	279.	19.7	0.745
250.0	0.03757	-48.8	-0.0670	238.	18.1	0.768
260.0	0.03873	-41.0	-0.0560	198.	16.6	0.795
270.0	0.04012	-32.9	-0.0448	161.	15.0	0.830
280.0	0.04180	-24.3	-0.0332	125.	13.4	0.876
290.0	0.04396	-15.2	-0.0210	93.	11.8	0.943
300.0	0.04691	-5.3	-0.0078	63.	10.1	1.048
310.0	0.05139	6.0	0.0070	39.0	8.33	1.230
320.0	0.05900	19.7	0.0246	23.2	6.53	1.494
330.0	0.07085	35.2	0.0444	19.3	5.00	1.529
340.0	0.0837	49.4	0.0622	23.2	4.01	1.294
350.0	0.0949	61.3	0.0770	29.7	3.39	1.098
360.0	0.1045	71.6	0.0897	36.6	2.98	0.975
370.0	0.1128	81.0	0.1010	43.4	2.68	0.897
380.0	0.1203	89.7	0.1115	49.9	2.45	0.846
390.0	0.1271	98.0	0.1213	56.1	2.27	0.811
400.0	0.1334	105.9	0.1306	62.0	2.12	0.786
420.0	0.1448	121.3	0.1483	72.9	1.89	0.754
440.0	0.1552	136.2	0.1651	83.0	1.71	0.737
460.0	0.1648	150.9	0.1812	92.3	1.58	0.728
480.0	0.1739	165.4	0.1968	101.1	1.47	0.723
500.0	0.1825	179.8	0.2120	109.3	1.37	0.722
520.0	0.1907	194.3	0.2269	117.2	1.30	0.723
540.0	0.1986	208.8	0.2415	124.8	1.23	0.725
560.0	0.2063	223.3	0.2559	132.1	1.17	0.729
580.0	0.2138	238.0	0.2702	139.2	1.12	0.733
600.0	0.2211	252.7	0.2842	146.0	1.07	0.738

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 800 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02518	-222.0	-0.3753	2252.	75.0	0.491
-20.0	0.02562	-212.1	-0.3521	2074.	70.3	0.505
0.0	0.02607	-201.9	-0.3295	1896.	65.6	0.515
20.0	0.02656	-191.5	-0.3074	1721.	61.1	0.526
40.0	0.02708	-180.9	-0.2857	1551.	56.6	0.537
60.0	0.02763	-170.0	-0.2644	1389.	52.4	0.550
80.0	0.02823	-158.8	-0.2434	1234.	48.2	0.564
100.0	0.02888	-147.4	-0.2226	1087.	44.2	0.579
110.0	0.02922	-141.6	-0.2122	1017.	42.3	0.587
120.0	0.02959	-135.6	-0.2019	949.	40.4	0.595
130.0	0.02997	-129.6	-0.1917	883.	38.5	0.604
140.0	0.03037	-123.5	-0.1814	820.	36.7	0.613
150.0	0.03080	-117.4	-0.1712	758.	34.9	0.622
160.0	0.03125	-111.1	-0.1610	699.	33.2	0.632
170.0	0.03172	-104.7	-0.1508	642.	31.4	0.642
180.0	0.03223	-98.2	-0.1406	586.	29.7	0.653
190.0	0.03278	-91.6	-0.1304	533.	28.1	0.664
200.0	0.03337	-84.9	-0.1201	482.	26.4	0.677
210.0	0.03401	-78.1	-0.1098	433.	24.8	0.690
220.0	0.03470	-71.1	-0.0995	386.	23.3	0.704
230.0	0.03547	-63.9	-0.0891	340.	21.7	0.720
240.0	0.03632	-56.7	-0.0786	297.	20.2	0.738
250.0	0.03728	-49.2	-0.0679	255.	18.6	0.758
260.0	0.03837	-41.5	-0.0572	216.	17.1	0.782
270.0	0.03964	-33.5	-0.0462	179.	15.6	0.812
280.0	0.04115	-25.2	-0.0348	144.	14.1	0.849
290.0	0.04302	-16.4	-0.0231	112.	12.5	0.899
300.0	0.04543	-7.1	-0.0107	82.	11.0	0.971
310.0	0.04873	3.2	0.0027	56.8	9.37	1.077
320.0	0.05361	14.7	0.0175	37.3	7.75	1.232
330.0	0.06103	27.8	0.0343	26.3	6.23	1.375
340.0	0.07089	41.6	0.0517	24.2	5.01	1.348
350.0	0.0812	54.4	0.0676	27.5	4.16	1.201
360.0	0.0907	65.7	0.0814	33.0	3.58	1.064
370.0	0.0992	75.9	0.0937	39.2	3.17	0.966
380.0	0.1068	85.2	0.1049	45.5	2.86	0.899
390.0	0.1136	93.9	0.1152	51.6	2.62	0.852
400.0	0.1200	102.3	0.1250	57.6	2.43	0.819
420.0	0.1314	118.2	0.1433	68.8	2.14	0.777
440.0	0.1416	133.5	0.1605	79.1	1.93	0.753
460.0	0.1511	148.4	0.1769	88.7	1.76	0.740
480.0	0.1599	163.2	0.1928	97.8	1.63	0.733
500.0	0.1682	177.8	0.2082	106.3	1.52	0.730
520.0	0.1762	192.4	0.2232	114.4	1.43	0.730
540.0	0.1838	207.0	0.2380	122.2	1.35	0.731
560.0	0.1912	221.7	0.2525	129.7	1.28	0.734
580.0	0.1984	236.4	0.2668	137.0	1.22	0.737
600.0	0.2054	251.3	0.2810	144.0	1.17	0.742

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 850 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02517	-221.9	-0.3754	2274.	75.6	0.491
-20.0	0.02560	-211.9	-0.3523	2094.	70.7	0.504
0.0	0.02606	-201.8	-0.3297	1915.	66.0	0.515
20.0	0.02654	-191.4	-0.3076	1739.	61.5	0.526
40.0	0.02705	-180.8	-0.2860	1569.	57.0	0.537
60.0	0.02760	-169.9	-0.2647	1406.	52.7	0.549
80.0	0.02820	-158.7	-0.2436	1250.	48.6	0.563
100.0	0.02884	-147.3	-0.2229	1104.	44.6	0.578
110.0	0.02918	-141.5	-0.2126	1033.	42.6	0.586
120.0	0.02954	-135.6	-0.2023	965.	40.7	0.594
130.0	0.02992	-129.6	-0.1920	900.	38.9	0.603
140.0	0.03031	-123.5	-0.1818	836.	37.1	0.612
150.0	0.03073	-117.3	-0.1716	775.	35.3	0.621
160.0	0.03118	-111.0	-0.1614	715.	33.5	0.630
170.0	0.03164	-104.7	-0.1512	658.	31.8	0.640
180.0	0.03214	-98.2	-0.1411	603.	30.1	0.651
190.0	0.03268	-91.6	-0.1309	550.	28.5	0.662
200.0	0.03325	-85.0	-0.1207	499.	26.8	0.674
210.0	0.03387	-78.1	-0.1104	449.	25.2	0.686
220.0	0.03455	-71.2	-0.1001	402.	23.7	0.700
230.0	0.03529	-64.1	-0.0898	357.	22.1	0.715
240.0	0.03610	-56.9	-0.0794	314.	20.6	0.731
250.0	0.03701	-49.5	-0.0689	273.	19.1	0.750
260.0	0.03804	-41.9	-0.0582	234.	17.6	0.772
270.0	0.03922	-34.0	-0.0474	197.	16.1	0.797
280.0	0.04060	-25.9	-0.0363	162.	14.7	0.829
290.0	0.04226	-17.4	-0.0249	130.	13.2	0.868
300.0	0.04431	-8.4	-0.0130	100.	11.7	0.921
310.0	0.04696	1.1	-0.0005	74.	10.2	0.993
320.0	0.05056	11.6	0.0129	53.	8.7	1.090
330.0	0.05563	23.1	0.0276	37.9	7.30	1.203
340.0	0.06257	35.5	0.0432	30.3	6.03	1.269
350.0	0.07093	48.1	0.0589	29.2	5.01	1.227
360.0	0.07955	59.9	0.0733	32.1	4.27	1.126
370.0	0.0877	70.6	0.0864	36.9	3.74	1.028
380.0	0.0952	80.5	0.0982	42.4	3.34	0.951
390.0	0.1020	89.8	0.1092	48.2	3.03	0.895
400.0	0.1083	98.5	0.1194	54.0	2.79	0.854
420.0	0.1196	115.0	0.1384	65.2	2.42	0.801
440.0	0.1298	130.7	0.1560	75.7	2.16	0.771
460.0	0.1390	146.0	0.1728	85.5	1.96	0.753
480.0	0.1476	160.9	0.1889	94.8	1.81	0.744
500.0	0.1557	175.8	0.2045	103.5	1.68	0.739
520.0	0.1635	190.5	0.2197	111.9	1.57	0.737
540.0	0.1709	205.3	0.2346	119.9	1.48	0.737
560.0	0.1780	220.1	0.2492	127.5	1.40	0.739
580.0	0.1849	234.9	0.2636	135.0	1.34	0.742
600.0	0.1917	249.8	0.2779	142.1	1.27	0.746

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 900 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02516	-221.7	-0.3756	2295.	76.1	0.491
-20.0	0.02559	-211.8	-0.3525	2114.	71.2	0.504
0.0	0.02604	-201.6	-0.3299	1934.	66.5	0.515
20.0	0.02652	-191.2	-0.3079	1757.	61.8	0.525
40.0	0.02703	-180.6	-0.2862	1586.	57.4	0.536
60.0	0.02758	-169.8	-0.2649	1423.	53.1	0.549
80.0	0.02816	-158.6	-0.2439	1267.	48.9	0.562
100.0	0.02880	-147.2	-0.2232	1120.	44.9	0.577
110.0	0.02914	-141.4	-0.2129	1050.	43.0	0.585
120.0	0.02950	-135.5	-0.2026	982.	41.1	0.593
130.0	0.02987	-129.5	-0.1924	916.	39.2	0.602
140.0	0.03026	-123.4	-0.1822	852.	37.4	0.610
150.0	0.03067	-117.3	-0.1720	791.	35.6	0.619
160.0	0.03111	-111.0	-0.1618	731.	33.9	0.629
170.0	0.03157	-104.7	-0.1517	674.	32.2	0.639
180.0	0.03206	-98.2	-0.1415	619.	30.5	0.649
190.0	0.03258	-91.7	-0.1314	566.	28.8	0.660
200.0	0.03314	-85.0	-0.1212	515.	27.2	0.671
210.0	0.03375	-78.2	-0.1110	466.	25.6	0.683
220.0	0.03440	-71.3	-0.1008	419.	24.1	0.696
230.0	0.03511	-64.3	-0.0905	374.	22.6	0.710
240.0	0.03590	-57.1	-0.0802	331.	21.1	0.726
250.0	0.03677	-49.7	-0.0697	290.	19.6	0.743
260.0	0.03774	-42.2	-0.0592	251.	18.1	0.763
270.0	0.03884	-34.5	-0.0485	214.	16.7	0.785
280.0	0.04011	-26.5	-0.0376	180.	15.2	0.812
290.0	0.04161	-18.2	-0.0265	147.	13.8	0.845
300.0	0.04341	-9.5	-0.0150	118.	12.4	0.886
310.0	0.04565	-0.4	-0.0031	92.	11.0	0.939
320.0	0.04853	9.4	0.0095	69.	9.6	1.007
330.0	0.05233	19.8	0.0228	52.	8.2	1.088
340.0	0.05739	31.1	0.0370	40.1	6.96	1.160
350.0	0.06376	42.9	0.0517	34.7	5.88	1.182
360.0	0.07097	54.6	0.0660	34.3	5.02	1.140
370.0	0.07833	65.6	0.0794	36.9	4.36	1.067
380.0	0.0854	75.9	0.0918	41.2	3.86	0.994
390.0	0.0920	85.6	0.1032	46.2	3.48	0.934
400.0	0.0982	94.7	0.1138	51.6	3.18	0.888
420.0	0.1094	111.8	0.1335	62.4	2.73	0.825
440.0	0.1193	127.9	0.1516	72.8	2.42	0.789
460.0	0.1284	143.5	0.1687	82.8	2.18	0.767
480.0	0.1368	158.7	0.1851	92.2	2.00	0.754
500.0	0.1447	173.7	0.2009	101.1	1.85	0.747
520.0	0.1522	188.6	0.2163	109.6	1.73	0.744
540.0	0.1594	203.5	0.2313	117.7	1.62	0.743
560.0	0.1663	218.4	0.2461	125.6	1.53	0.744
580.0	0.1730	233.4	0.2606	133.1	1.45	0.747
600.0	0.1795	248.4	0.2749	140.5	1.38	0.750

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 950 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02514	-221.6	-0.3758	2317.	76.6	0.491
-20.0	0.02557	-211.6	-0.3527	2134.	71.7	0.504
0.0	0.02602	-201.5	-0.3301	1953.	66.9	0.514
20.0	0.02650	-191.1	-0.3081	1775.	62.2	0.525
40.0	0.02701	-180.5	-0.2865	1604.	57.7	0.536
60.0	0.02755	-169.6	-0.2652	1439.	53.4	0.548
80.0	0.02813	-158.5	-0.2442	1283.	49.3	0.562
100.0	0.02876	-147.1	-0.2235	1136.	45.2	0.577
110.0	0.02910	-141.3	-0.2132	1066.	43.3	0.584
120.0	0.02945	-135.4	-0.2030	998.	41.4	0.592
130.0	0.02982	-129.4	-0.1927	932.	39.6	0.601
140.0	0.03021	-123.4	-0.1826	868.	37.7	0.609
150.0	0.03061	-117.2	-0.1724	807.	36.0	0.618
160.0	0.03104	-111.0	-0.1623	747.	34.2	0.627
170.0	0.03149	-104.7	-0.1521	690.	32.5	0.637
180.0	0.03198	-98.2	-0.1420	635.	30.8	0.647
190.0	0.03249	-91.7	-0.1319	582.	29.2	0.658
200.0	0.03304	-85.1	-0.1217	531.	27.6	0.669
210.0	0.03362	-78.3	-0.1116	482.	26.0	0.680
220.0	0.03426	-71.4	-0.1014	435.	24.5	0.693
230.0	0.03495	-64.4	-0.0912	390.	23.0	0.706
240.0	0.03570	-57.3	-0.0809	347.	21.5	0.721
250.0	0.03654	-50.0	-0.0706	307.	20.0	0.737
260.0	0.03746	-42.5	-0.0601	268.	18.6	0.755
270.0	0.03850	-34.9	-0.0496	231.	17.2	0.775
280.0	0.03969	-27.0	-0.0388	197.	15.8	0.798
290.0	0.04106	-18.9	-0.0279	165.	14.4	0.826
300.0	0.04267	-10.4	-0.0167	135.	13.0	0.860
310.0	0.04462	-1.6	-0.0052	108.	11.7	0.901
320.0	0.04703	7.7	0.0068	85.	10.3	0.952
330.0	0.05008	17.5	0.0193	66.	9.0	1.012
340.0	0.05399	27.9	0.0324	52.0	7.81	1.072
350.0	0.05889	38.9	0.0460	43.2	6.70	1.113
360.0	0.06469	50.1	0.0598	39.5	5.77	1.113
370.0	0.0710	61.1	0.0731	39.5	5.02	1.075
380.0	0.0774	71.6	0.0856	42.0	4.43	1.020
390.0	0.0836	81.5	0.0974	45.8	3.97	0.965
400.0	0.0896	90.9	0.1084	50.4	3.61	0.918
420.0	0.1004	108.5	0.1287	60.4	3.07	0.849
440.0	0.1102	125.1	0.1473	70.6	2.69	0.807
460.0	0.1191	140.9	0.1647	80.5	2.41	0.781
480.0	0.1273	156.4	0.1814	90.0	2.20	0.766
500.0	0.1350	171.6	0.1974	99.0	2.03	0.756
520.0	0.1423	186.7	0.2130	107.6	1.88	0.751
540.0	0.1492	201.8	0.2281	115.9	1.76	0.750
560.0	0.1559	216.8	0.2430	123.8	1.66	0.750
580.0	0.1624	231.8	0.2576	131.5	1.57	0.751
600.0	0.1687	246.9	0.2720	139.0	1.50	0.754

Table B2.(cont.) THERMODYNAMIC PROPERTIES OF THE 0.1 MOLE FRACTION ISOPENTANE IN ISOBUTANE MIXTURE ALONG ISOBARS

SUPERCRITICAL PRESSURES

P = 1000 PSIA

T Deg F	V ft3/lb	H BTU/lb	S BTU/(lb.F)	DP/DD	DP/DT	CP BTU/(lb.F)
-40.0	0.02513	-221.4	-0.3760	2338.	77.1	0.491
-20.0	0.02555	-211.5	-0.3529	2154.	72.1	0.504
0.0	0.02600	-201.3	-0.3304	1972.	67.3	0.514
20.0	0.02648	-191.0	-0.3083	1793.	62.6	0.525
40.0	0.02698	-180.4	-0.2867	1621.	58.1	0.536
60.0	0.02752	-169.5	-0.2654	1456.	53.8	0.548
80.0	0.02810	-158.4	-0.2445	1300.	49.6	0.561
100.0	0.02873	-147.0	-0.2238	1152.	45.6	0.576
110.0	0.02906	-141.2	-0.2135	1082.	43.6	0.584
120.0	0.02941	-135.3	-0.2033	1014.	41.7	0.591
130.0	0.02977	-129.4	-0.1931	948.	39.9	0.600
140.0	0.03015	-123.3	-0.1829	884.	38.1	0.608
150.0	0.03055	-117.2	-0.1728	822.	36.3	0.617
160.0	0.03098	-111.0	-0.1627	763.	34.5	0.626
170.0	0.03142	-104.6	-0.1526	706.	32.8	0.635
180.0	0.03189	-98.2	-0.1425	651.	31.2	0.645
190.0	0.03240	-91.7	-0.1324	598.	29.5	0.655
200.0	0.03293	-85.1	-0.1223	547.	28.0	0.666
210.0	0.03351	-78.4	-0.1122	498.	26.4	0.677
220.0	0.03413	-71.5	-0.1020	451.	24.9	0.689
230.0	0.03479	-64.6	-0.0918	407.	23.4	0.702
240.0	0.03552	-57.5	-0.0816	364.	21.9	0.716
250.0	0.03632	-50.2	-0.0714	323.	20.4	0.731
260.0	0.03720	-42.8	-0.0610	284.	19.0	0.747
270.0	0.03819	-35.2	-0.0506	248.	17.6	0.766
280.0	0.03930	-27.5	-0.0400	213.	16.3	0.787
290.0	0.04057	-19.5	-0.0292	181.	14.9	0.811
300.0	0.04204	-11.2	-0.0183	152.	13.6	0.840
310.0	0.04377	-2.6	-0.0071	125.	12.3	0.873
320.0	0.04586	6.3	0.0045	101.	11.0	0.913
330.0	0.04842	15.7	0.0164	81.	9.7	0.959
340.0	0.05158	25.5	0.0288	65.	8.6	1.008
350.0	0.05549	35.8	0.0416	53.7	7.47	1.049
360.0	0.06016	46.5	0.0546	47.1	6.50	1.069
370.0	0.06544	57.1	0.0676	44.4	5.69	1.059
380.0	0.0710	67.6	0.0801	44.8	5.02	1.026
390.0	0.0767	77.6	0.0920	47.1	4.49	0.983
400.0	0.0823	87.2	0.1032	50.6	4.06	0.940
420.0	0.0927	105.3	0.1240	59.5	3.43	0.870
440.0	0.1021	122.3	0.1431	69.1	2.98	0.824
460.0	0.1108	138.4	0.1608	78.8	2.66	0.795
480.0	0.1188	154.2	0.1778	88.2	2.41	0.777
500.0	0.1263	169.6	0.1940	97.2	2.21	0.765
520.0	0.1334	184.8	0.2097	105.9	2.05	0.759
540.0	0.1402	200.0	0.2251	114.3	1.92	0.756
560.0	0.1467	215.2	0.2400	122.3	1.80	0.755
580.0	0.1529	230.3	0.2547	130.1	1.70	0.756
600.0	0.1590	245.5	0.2692	137.7	1.61	0.758

APPENDIX C.

A LISTING OF THE FORTRAN ROUTINES IMPLEMENTING THE FUNCTIONS DESCRIBED IN THIS PUBLICATION. A MAIN PROGRAM IS INCLUDED FOR THE GENERATION OF THERMODYNAMIC PROPERTIES ALONG AN ISOBAR, AND WHICH WILL ALSO SERVE AS AN EXAMPLE FOR THE USE OF THE VARIOUS SUBROUTINES.

```
      PROGRAM ISOBAR
C  THIS IS A SAMPLE PROGRAM WHICH CAN BE USED TO CALCULATE ALL
C    THERMODYNAMIC PROPERTIES FOR A RANGE OF TEMPERATURES AT A
C    SPECIFIED PRESSURE AND COMPOSITION.  THE ROUTINE 'SETUP' WILL
C    INQUIRE OF THE USER THE CHOICE OF UNITS TO BE USED.
      COMMON /PROPS/ P,A,G,H,U,S,CV,CP,DPDD,DPDT,W
      COMMON /CRITC / PC4,PC5,DC4,DC5,TC4,TC5,PI4,PI5,DI4,DI5,TI4,TI5
      COMMON /MIXFAC/ FX,HX,QX,TH,PH,FFT,FFV,V45,T45,VX,TX
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX,DRK
      CHARACTER*8 ND,NH,NT,NP
      COMMON /UNITS/ IT,ID,IP,IH,FT,FD,FP,FH,/UNITC/NT,ND,NP,NH,IFL
      CHARACTER*1 IFL
      CALL SETUP
C  THE INPUT QUANTITIES ARE COMPOSITION, PRESSURE, INITIAL FINAL
C    AND INCREMENTAL VALUES OF TEMPERATURE IN THE UNITS CHOSEN
    1 READ(*,*,END=9) X,PIN,T1,T2,TI
      TT=T1-TI
      CALL FACTOR(X,1.D0,1.D0)
      FDD=FD
      IF(ID.NE.3) FDD=FD/WMX
      FHH=FH
      IF(ID.NE.3) FHH=FH*WMX
      PP = PIN*FP/PR/QX
      DDD = 3.
    2 TT=TT+TI
      IF(TT GT.T2) GO TO 1
      T=TTT(TT)/FX
      PSAT=PS(T)
      IF(DDD.GT.1. .AND. PP.LT.PSAT) DDD=PP/RSS/T
      CALL DFIND(D,PP,DDD,T,DQ)
      DDD=D
      CALL FACTOR(X,D,T)
      T=TTT(TT)/FX
      PP = PIN*FP/PR/QX
      CALL DFIND(D,PP,DDD,T,DQ)
      DDD=D
      CALL FACTOR(X,D,T)
      T=TTT(TT)/FX
      PP = PIN*FP/PR/QX
      CALL DFIND(D,PP,DDD,T,DQ)
      DDD=D
      CALL THERM(D,T,X)
      PPP = P/FP *PR
      DD = D*DR/FDD/HX
      DPDT = DPDT*FT/FP *PR/TR
      DPDD = DPDD*FDD/FP *PR/DR
      CV = CV*FT/FHH *SR
      CP = CP*FT/FHH *SR
      S = S*FT/FHH *SR
      H = H/FHH *AR
      U = U/FHH *AR
      A=A/FHH *AR
      G=G/FHH *AR
      WRITE(*,3) IFL,X,DD,TT,PPP,DPDT,DPDD,S,H,U,A,G
    3 FORMAT(1X,A1,F5.3,F9.4,F8.3,F10.5,F10.5,3F10.5,4F12.5)
```

```
      GO TO 2
    9 STOP
      END
C
      BLOCK DATA
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX,DRK
      COMMON /NCONST/G(25),AA,MM(25),NN(25),NC
      COMMON /BCONST/ B1(12),B2(12)
      COMMON /CRITC / PC4,PC5,DC4,DC5,TC4,TC5,PI4,PI5,DI4,DI5,TI4,TI5
      COMMON /IDEAL5/ TBT(16),A5BT(16),S5BT(16),CV5BT(16),TCT(16)
     1,G5CT(16),S5CT(16),CP5CT(16)
      COMMON /IDEAL4/ C4C(11)
      COMMON /CONVRT/ FFP(6),FFD(6),FFT(6),FFH(6)
      DATA PR,DRK,TR/3.629E6,225.5,407.84/
C THE CONVERSION FACTORS FOR DIFFERENT SYSTEMS OF UNITS ARE AS
C   RECOMMENDED BY THE ASTM IN THEIR 'STANDARD FOR METRIC PRACTICE'
C   (STANDARD E380-79).
      DATA FFP/1.E6,1.E5,1.01325E5,6894.757,2*1./
      DATA FFD/1.,2*1000.,16.01846,2*0./
      DATA FFH/2*1.E3,4.184E3,2.324444E3,2*1./
C THE ABOVE CONVERSION FACTORS FOR THE CAL AND BTU ARE THE
C   'THERMOCHEMICAL' CAL AND BTU.
      DATA TI4,PI4,DI4/407.84,3.629E6,225.5/
      DATA TI5,PI5,DI5/460.51,3.3707E6,234.3/
      DATA C4C/-5.0937093E-2,2.5252496,346.6523555,2.551551
     1,-53.012165,3.3434600,-.11945060,-38.124442
     2,7.9688113,27.849029,58.1382356/
     *, WM4,WM5,R/58.1242E-3,72.1512E-3,8.31441/, AA/.38796166/
C THE VALUES USED FOR M4, M5 AND R  ARE THOSE RECOMMENDED BY COHEN AND
C   TAYLOR IN 'THE 1973 LEAST-SQUARES ADJUSTMENT OF THE FUMDAMENTAL
C   CONSTANTS', JPCRD VOL 2 P 663 (1973).
C THE FOLLOWING TABLE OF THE IDEAL GAS PROPERTIES FOR ISOPENTANE ARE FROM
C   SCOTT, BUR OF MINES BULLETIN 666 (1974).
      DATA TCT/.01,2.E2,273.15,3.E2,4.E2,5.E2,6.E2,7.E2,8.E2,9.E2
     1,1.E3,1.1E3,1.2E3,1.3E3,1.4E3,1.5E3/
      DATA G5CT/0.,-58.16,-62.98,-64.59,-70.20,-75.38,-80.3
     1,-85.0,-89.5,-93.9,-98.1,-102.2,-106.1,-109.9,-113.6,-117.1/
      DATA S5CT/0.,72.50,79.72,82.30,91.63,100.57,109.1
     1,117.3,125.0,132.4,139.4,146.1,152.4,158.5
     2,164.3,169.8/,CP5CT/0.,20.30,26.38,28.56,36.54
     3,43.80,50.2,55.7,60.5,64.7,68.4,71.6,74.4,77.,79.,81./
C
      DATA G/ -9.6153074,  27.935713, -125.69635,  544.06550
     *,  -479.48565,   141.34133,  -12.372626,  -34.731447
     *,   .57569010E3,   .53210066E3,   .41502454E3,  -.42359614E3
     *.   .58118955E2,  -.50009149E2,   .23153999E3,  -.38080769E3
     *,   .26120687E3,  -.22934154E2,  -.14503027E2,  -.10167777E2
     *,   .30142576E2,  -.33549797E2,   .25502886E2,  -.53441617
     *,  .037213690/,NC/25/
      DATA MM/1,2,4,5,6,8,1,3,5,6,7,8,1,2,4,6,8,1,6,1,2,5,8,2,8/
      DATA NN/2,2,2,2,2,2,3,3,3,3,3,3,4,4,4,4,4,5,5,6,6,6,6,7,7/
      DATA B1/.15388314,-.03916987,3*0.,-2.5198404E-4,3*0.
     *,9.8801205E-7,2*0./, B2/3.0020353,0.,-6.1529971,0.
     *,-1.4570002,0.,.13342155,4*0.,-9.004371E-5/
      END
C
```

```
      SUBROUTINE SETUP
C  THIS ROUTINE ESTABLISHES THE SYSTEM OF UNITS DESIRED AND PUTS
C    IN PLACE THE NECESSARY VALUES FOR THE REDUCTION PARAMETERS.
      COMMON /UNITS/ IT,ID,IP,IH,FT,FD,FP,FH,/UNITC/NT,ND,NP,NH
      COMMON /CRITC / PC4,PC5,DC4,DC5,TC4,TC5,PI4,PI5,DI4,DI5,TI4,TI5
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX,DRK
      COMMON /CONVRT/ FFP(6),FFD(6),FFT(6),FFH(6)
      CHARACTER*8 NNT(4),NNP(4),NND(4),NT,ND,NP,NH
      DATA NNT/'K','C','R','F'/
      DATA NND/'KG/M3 ','G/CM3 ','MOL/L ','LB/FT3'/
      DATA NNP/'MPA','BAR','ATM','PSI'/
      WRITE(*,12)
      READ *,IT
      IF(IT-3) 102,105,105
  102 PRINT 13
      READ *,ID
      PRINT 14
      READ *,IP
      PRINT 15
      READ *,IH
      GO TO 109
  105 ID=4
      IP=4
      IH=4
  109 NP=NNP(IP)
      FP=FFP(IP)
      NT=NNT(IT)
      ND=NND(ID)
      FD=FFD(ID)
      FH=FFH(IH)
  110 DR = DRK/WM4
      AR = PR/DR
      SR = AR/TR
      WR = (1000.*AR)**(.5)
      RSS = R/SR
      CALL FZ5GEN
      PC4 = PI4/PR
      DC4 = DI4/WM4 /DR
      TC4 = TI4/TR
      PC5 = PI5/PR
      DC5 = DC4 * TI4/TI5 *PI5/PI4
      TC5 = TI5/TR
      RETURN
   11 FORMAT(' ENTER UNITS CHOSEN FOR ',2A6)
   12 FORMAT(' CHOOSE FROM 1=DEG K, 2=DEG C, 3=DEG R, 4=DEG F')
   13 FORMAT(' CHOOSE FROM 1=KG/M3, 2=G/CM3, 3=MOL/L, 4=LB/FT3')
   14 FORMAT(' CHOOSE FROM 1=MPA, 2=BAR, 3=ATM, 4=PSIA')
   15 FORMAT(' CHOOSE FROM 1=KJ/KG, 2=J/G, 3=CAL/G, 4=BTU/LB')
      END
CC
      FUNCTION TTT(T)
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX
      CHARACTER*8 NT,ND,NP,NH
      COMMON /UNITS/ IT,ID,IP,IH,FT,FD,FP,FH,/UNITC/NT,ND,NP,NH
      GO TO (1,2,3,4),IT
    1 TTT=T/TR
```

```
      FT=1.
      RETURN
    2 TTT=(T+273.15)/TR
      FT=1.
      RETURN
    3 TTT=T/1 8/TR
      FT=5./9.
    4 TTT=(T+459.67)/1.8/TR
      FT=5./9.
      RETURN
      END
      FUNCTION TTI(T)
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX
      COMMON /UNITS/ IT,ID,IP,IH,FT,FD,FP,FH
      GO TO (5,6,7,8),IT
    5 TTI = T*TR
      RETURN
    6 TTI = T*TR-273.15
      RETURN
    7 TTI = T*TR*1.8
      RETURN
    8 TTI = T*TR*1.8 - 459.67
      RETURN
      END
CC
      SUBROUTINE FZ4(TT,AZ,SZ,CVZ)
C   THE IDEAL GAS FUNCTIONS FOR ISOBUTANE
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX,DRK
      COMMON /IDEAL4/ C(11)
      U=C(9)/TT
      Y=EXP(U)
      SZ=C(8)*(U*Y/(Y-1.)-ALOG(Y-1.))-C(10)/TT-C(11)*(ALOG(TT)+1.)
      AZ=C(8)*TT*ALOG(Y-1.)+(C(10)+C(11)*TT)*ALOG(TT)
      CVZ   C(10)/TT-C(11)+C(8)*U*U*Y/(Y-1.)**2
      DO 8 I=1,7
      CVZ=CVZ-C(I)*(I-3)*(I-4)*TT**(I-4)
      AZ=AZ+C(I)*TT**(I-3)
    7 SZ=SZ-C(I)*TT**(I-4)*(I-3)
    8 CONTINUE
      RETURN
      END
C
      SUBROUTINE FZ5(TT,AZ,SZ,CVZ)
C   THE IDEAL GAS FUNCTIONS FOR ISOPENTANE
      COMMON /IDEAL5/ TBT(16),A5BT(16),S5BT(16),CV5BT(16),CALTAB(64)
      TK=TT
      IB=1
      DO 2 I=3,14
      IF(TT.LT.TBT(I)) GO TO 3
    2 IB=IB+1
    3 CALL INTRPL(TBT(IB),A5BT(IB),4,TK,AI)
      CALL INTRPL(TBT(IB),S5BT(IB),4,TK,SI)
      CALL INTRPL(TBT(IB),CV5BT(IB),4,TK,CVI)
      AZ = AI - 35.1874288 + TK*145.188298
      SZ = SI - 145.188298
      CVZ = CVI
```

```
      RETURN
      END
C
      SUBROUTINE FZ5GEN
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX
      COMMON/IDEAL5/TB(16),AB(16),SB(16),CVB(16),T(16),G(16),S(16),C(16
      Q = 4.184
      RC = R/Q
      DO 8 I=1,16
      AB(I) = (G(I)-RC*(1.-ALOG(T(I))))*T(I)*Q/AR
      SB(I) = (S(I) RC*ALOG(T(I)))*Q/SR
      CVB(I) = (C(I)*Q-R)/SR
    8 TB(I) = T(I)/TR
      RETURN
      END
C
      SUBROUTINE IDEALF(TT,X)
C  THIS ROUTINE GENERATES THE IDEAL GAS FUNCTIONS FOR THE MIXTURE
C    FROM THE FUNCTIONS FOR THE PURE SUBSTANCES.
      COMMON /IDEAL/ AZ,SZ,CVZ
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX
      COMMON /MIXFAC/ FX,HX,QX,TH,PH,FFT,FFV,V45,T45,VCX,TCX
      T = TT*FX
      CALL FZ4(T,AZ4,SZ4,CVZ4)
      CALL FZ5(T,AZ5,SZ5,CVZ5)
      TERM = 0
      IF(X.GT.0. .AND. X .LT. 1.) TERM = X*ALOG(X)+(1.-X)*ALOG(1.-X)
      AZ   (X*AZ5 + (1.-X)*AZ4) + RSS*T*TERM
      SZ = (X*SZ5 + (1.-X)*SZ4) - RSS*TERM
      CVZ = (X*CVZ5 + (1.-X)*CVZ4)
      RETURN
      END
C
      SUBROUTINE INTRPL(X,Y,K,XO,YO)
      DIMENSION X(100),Y(100),XLAG(30)
      YO=0
      DO 1220 I=1,K
      XLAG(I)=1.0
      DO 1215 J=1,K
      IF(J-I) 1210,1215,1210
 1210 XLAG(I)=XLAG(I)*(XO-X(J))/(X(I)-X(J))
 1215 CONTINUE
 1220 YO-YO+(XLAG(I)*Y(I))
      RETURN
      END
C
      SUBROUTINE CONFML(D,T)
C  THIS ROUTINE GENERATES THE CONFORMAL PART OF THE MIXTURE THERMO-
C    DYNAMIC FUNCTIONS.
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX
      COMMON /MIXFAC/ FX,HX,QX,TH,PH,FFT,FFV,V45,T45,VCX,TCX
      COMMON /BCONST/ PB(12),QB(12),NVIR,NVOL
      COMMON /NCONST/ A(25),AA,II(25),JJ(25),N
      COMMON /CONF/ PCF,ZCF,ACF,SCF,CVCF,DPDD,DPDT
      DIMENSION V(12)
      HL = -ALOG(HX)
```

```
      V(1)=1.
    1 DO 2 I=2,12
    2 V(I)=V(I-1)/T
      B1=PB(1)-PB(2)*ALOG(V(2))
      B2=QB(1)
      B1T=PB(2)
      B2T=0.
      B1TT=-PB(2)
      B2TT=0.
      DO 4 I=3,12
      B1=B1+PB(I)*V(I-1)
      B2=B2+QB(I)*V(I-1)
      B1T=B1T-(I-2)*PB(I)*V(I-1)
      B2T=B2T-(I-2)*QB(I)*V(I-1)
      B1TT=B1TT+PB(I)*(I-2)*(I-1)*V(I-1)
    4 B2TT=B2TT+QB(I)*(I-2)*(I-1)*V(I-1)
      Y=B1*D
      X=1.-Y
      DPDDB = RSS*T*(9.*Y*Y/X**4 + Y/X/X - 1./X)
      QAB = D*T*B2 + RSS*T*(ALOG(D/X)+1.5/X/X-4.*D*B1)
      PBASE = T*B2 + RSS*T/D*(1./X+3.*Y/X**3-4.*Y)
      PBASE = PBASE*D*D
      QSB =-QAB/T - D*B2T - RSS*D*B1T*(1./X+3./X**3-4.)
      CVB = -2.*D*B2T -D*B2TT -RSS*D*((1./X+3./X**3-4.)*(2.*B1T+B1TT)
     1 +D*(1./X/X+9./X**4)*B1T*B1T)
      DPDTB = PBASE/T + D*D*(B2T+RSS*(1./X/X+3./X**3+9.*Y/X**4-4.)*B1T)
      QSR=0.
      D2P=0.
      CVR=0.
      DPDTR=0.
      Q=0.
      ARES=0.
      Q11=0.
      E=EXP(-AA*D)
      Q10=D*D*E
      Q20=1.-E
      XX=ABS(AA*D)
      IF(XX.LT.1.E-5) Q20=AA*D
      DO 10 I=1,N
      K=II(I)
      L=JJ(I)
      ZZ=K+1
      FCT=AA**ZZ*Q10*Q20**K*T**(1-L)
      DFCT=AA*AA*Q10*T**(1-L)*ZZ*Q20**(K-1)*(K-ZZ*Q20)
      DFDT=Q20**(K+1)*(1-L)*T**(-L)
      D2F=L*DFDT
      DPT=DFDT*Q10*AA*ZZ/Q20
      D2PA=L*DPT
      QSR=QSR+A(I)*DFDT
      DPDTR=DPDTR+A(I)*DPT
      CVR=CVR+A(I)*D2F
      D2P=D2P+A(I)*D2PA
      Q11 = Q11 + A(I)*DFCT
      Q = Q + A(I)*FCT
      ARES = ARES + A(I)*FCT*Q20/AA/Q10/ZZ
   10 CONTINUE
```

```
      PCF = PBASE+Q
      ZCF = PCF/D/T/RSS
      ACF = (QAB+ARES)/T/RSS + HL
      SCF = (QSB-QSR)/RSS - HL
      CVCF = (CVB+CVR)/RSS
      DPDD = (DPDDB+Q11)/T/RSS + ZCF
      DPDT = (DPDTB+DPDTR)/D/RSS - ZCF
      RETURN
      END
C
      SUBROUTINE FACTOR(X,D,T)
      CALL MIXRUL(X)
      CALL SHAPE(X,D,T)
      RETURN
      END
C
      SUBROUTINE SHAPE(X,D,T)
      COMMON /MIXFAC/ FX,HX,QX,TH,PH,FFT,FFV,V45,T45,VCX,TCX
      COMMON /CRITC / PC4,PC5,DC4,DC5,TC4,TC5,PI4,PI5,DI4,DI5,TI4,TI5
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX
      WMX = (1.-X)*WM4 + X*WM5
      CALL THPH(D,T)
      FX = TCX/TC4 *((1.-X)+X*TH)
      HX = VCX*DC4 *((1.-X)+X*PH+6.E4*(X*X*(1.-X)*(PH-1.)**3))
      QX = FX/HX
      RETURN
      END
C
      SUBROUTINE MIXRUL(X)
      COMMON /MIXFAC/ FX,HX,QX,TH,PH,FFT,FFV,V45,T45,VCX,TCX
      COMMON /CRITC / PC4,PC5,DC4,DC5,TC4,TC5,PI4,PI5,DI4,DI5,TI4,TI5
      CALL COMRUL
      VCX = (1.-X)**2/DC4 + 2.*X*(1.-X)*V45 + X*X/DC5
      TCX = (1. X)**2*TC4 + 2.*X*(1.-X)*T45 + X*X*TC5
      RETURN
      END
C
      SUBROUTINE COMRUL
      COMMON /MIXFAC/ FX,HX,QX,TH,PH,FFT,FFV,V45,T45,VCX,TCX
      COMMON /CRITC / PC4,PC5,DC4,DC5,TC4,TC5,PI4,PI5,DI4,DI5,TI4,TI5
      FFT = 1.003
      FFV = 1.005
      T45 = FFT*(TC4*TC5)**(.5)
      V45 = FFV*(.5*DC4**(-.3333) + .5*DC5**(-.3333))**3
      RETURN
      END
C
      SUBROUTINE THPH(D,T)
      COMMON /MIXFAC/ FX,HX,QX,TH,PH,FFT,FFV,V45,T45,VCX,TCX
      DATA PHT,PHD,PHC/-.067,-.02,-.035/
      DATA THT,THD,THC/-.01,.0058,.015/
      TT=T-1.
      DD=D-1.
      TH = 1. + THD*DD + THT*TT + THC*TT*TT
      PH = 1. + PHT*TT + PHC*TT*TT + PHD*DD
      RETURN
```

```
      END
C
      SUBROUTINE THERM(D,T,X)
C   THIS ROUTINE GENERATES THE TOTAL THERMODYNAMIC FUNCTIONS FROM
C     THE IDEAL AND CONFORMAL PARTS.
      COMMON /MIXFAC/ FX,HX,QX,TH,PH,FFT,FFV,V45,T45,VCX,TCX
      COMMON /UNITS/ IT,ID,IP,IH,FT,FD,FP,FH,/UNITC/NT,ND,NP,NH,IFL
      COMMON /IDEAL / AZ,SZ,CVZ
      COMMON /CONF  / PCF,ZCF,ACF,SCF,CVCF,DPDDCF,DPDTCF
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX
      COMMON /PROPS / P,A,G,H,U,S,CV,CP,DPDD,DPDT,W
      CHARACTER*8 NT,ND,NP,NH
      CHARACTER*1 IFL,IFB,IFA
      DATA IFB,IFA/' ','*'/
      IFL=IFB
      IF(D.GT..7 .AND. D.LT.1.3 .AND. T.GT..99 .AND. T.LT.1.02)
     1  IFL=IFA
      CALL IDEALF(T,X)
      CALL CONFML(D,T)
      P = PCF * QX
      A = AZ + RSS*T*FX*ACF
      G = A + P/D *HX
      S = SZ + RSS*SCF
      U = A + T*S*FX
      H = G + T*S*FX
      CV = CVZ + RSS*CVCF
      DPDT = (DPDTCF+ZCF)*D*RSS/HX
      DPDD = (DPDDCF+ZCF)*T*RSS*FX
      CP = CV + FX*HX*HX*T*DPDT**2/DPDD/D/D
      RETURN
      END
C
      SUBROUTINE MU(XMU1,XMU2,D2ADX2,D,T,X)
C   THIS ROUTINE CALCULATES THE CHEMICAL POTENTIALS (AND ALSO RETURNS
C     THE SECOND DERIVATIVE (D2A/DX2) AS A BYPRODUCT) THROUGH
C     NUMERICAL DIFFERENTIATION.
      COMMON /MIXFAC/ FX,HX,QX,TH,PH,FFT,FFV,V45,T45,VCX,TCX
      COMMON /UNITS/ IT,ID,IP,IH,FT,FD,FP,FH,/UNITC/NT,ND,NP,NH
      COMMON  IDEAL / AZ,SZ,CVZ
      COMMON /CONF  / PCF,ZCF,ACF,SCF,CVCF,DPDDCF,DPDTCF
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX
      COMMON /PROPS / P,A,G,H,U,S,CV,CP,DPDD,DPDT,W
      COMMON /INX/ DELX
      CALL FACTOR(X,D,T)
      HXO=HX
      FXO=FX
      QXO=QX
      CALL THERM(D,T,X)
      AO=A
      GO=G
      PO = P
      DELX=5.E-4
      IF(X.GT..9995) DELX=1.-X
      IF(X.LT.5.E-4)  DELX=X
      X1=X+DELX
      IF(X.EQ.0.) X1=1.E-6
```

```
      CALL FACTOR(X1,D,T)
      D1=D*HX/HXO
      T1=T*FXO/FX
      CALL THERM(D1,T1,X1)
      P1=P
      A1 = A
      X2=X-DELX
      IF(X.EQ.1.) X2=.999999
      CALL FACTOR(X2,D,T)
      D2=D*HX/HXO
      T2=T*FXO/FX
      CALL THERM(D2,T2,X2)
      P2=P
      A2 = A
      IF(DELX.EQ.0.) DELX=5.E-7
      DADX = (A1-A2)/(X1-X2)
      D2ADX2 = ((A1-A0)/(X1-X) - (A0-A2)/(X-X2))*2./(X1-X2)
      XMU1 = G0 - X*DADX
      XMU2 = G0 + (1.-X)*DADX
      RETURN
      END
CC
       SUBROUTINE DFIND(DOUT,P,D,T,DPD)
C  UTILITY ROUTINE FOR ITERATING TO FIND DENSITY AS A FUNCTION OF
C    PRESSURE AND TEMPERATURE.  AN INITIAL GUESS FOR THE DENSITY
C    IS REQUIRED AS PART OF THE INPUT.
      COMMON /MIXFAC/ FX,HX,QX,TH,PH,FFT,FFV,V45,T45,VX,TX
      COMMON /RCONST/ TR,PR,DR,AR,SR,WR,R,RSS,WM4,WM5,WMX,DRK
      COMMON /CONF/ PCF,ZCF,ACF,SCF,CVCF,DPDDCF,DPDT
      TOL=1.0E-07
      DD=D
      L=0
    9 L=L+1
      IF(DD.LE.0.) DD=1.E-6
      IF(DD.GT.3.6) DD=3.6
      CALL CONFML(DD,T)
      PP=PCF
      DPD = (DPDDCF+ZCF)*T*RSS*FX
      DPDX=DPD
   10  X1=D
       XX=DD
      IF(DPDX.GT.10.) TOL=1.0E-6
      IF(DPDX.GT.100.) TOL=1.0E-5
      IF(DPDX.GT.1000.) TOL=1.0E-4
      IF(ABS(1.-PP/P).LT.TOL) GO TO 20
      X2=(P-PP)/DPDX
      X=X2
   15 DD=DD+X
      IF(DD.LE.0.) DD=1.E-8
      IF(L.LE.40) GO TO 9
      DD=DD-X
      X2=X2/DD
      WRITE(*,1000)P,PP,X1,XX,T,X2,DPD
   20 CONTINUE
      DOUT=DD
 1000 FORMAT(' 40 ITERATIONS  IN DFIND PIN PCALC DIN DCALC T FRAC
```

```
     1DPD ,4G'3.6 3G13.6)
      RETURN
      END
C
      FUNCTION PS(T)
C  UTILITY ROUTINE TO FURNISH AN APPROXIMATE VALUE IN REDUCED UNITS
C    FOR THE VAPOR PRESSURE OF ISOBUTANE (USEFUL FOR GENERATING
C    INITIAL GUESSES FOR THE PRESSURE WHEN DETERMINING DEW- AND
C    BUBBLE-CURVES.)
      PS=0.
      IF(T.GE.1.) RETURN
  100 Y=1.-T
      A1=-6.83796
      A2=1.25220
      A5= 2.3406
      XN2=1.5
      X=(A1*Y+A2*Y**XN2+A5*Y**3)/T
      PS=EXP(X)
      END
```

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11. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here)

We present tables of thermodynamic properties, and dew and bubble properties, of a mixture of 90 mol % isobutane and 10 mol % isopentane, a working fluid in a binary geothermal power cycle. The tables are generated by a formulation of the Helmholtz free energy, in which the mixture properties are mapped onto the known properties of pure isobutane by means of the principle of generalized corresponding states. The data base for the Helmholtz free energy formulation is new. We report data obtained in three different apparatus: critical-line and isopentane vapor pressure data obtained in a visual cell; vapor-liquid equilibria data obtained in a mercury-operated variable-volume cell; and pressure-volume-temperature data for the 90 mol %--10 mol % mixture obtained in a semi-automated Burnett-isochoric apparatus. The principles of the methods, and estimates of the reliability, are discussed and all experimental data are compared with the surface. The results are tables of specific volume, enthalpy, entropy, specific heat and density and temperature derivatives of the pressure at 10 K temperature increments from 240 to 600 K along isobars from 0.01 to 20 MPa. Separate tables are prepared from the dew and bubble properties of the 90-10 mixture.

Estimates of the effects of isomeric impurity of isobutane are given in graphical form.

12. KEY WORDS (Six to twelve entries; alphabetical order; capitalize only proper names; and separate key words by semicolons)

critical line; generalized corresponding states; isobutane; isopentane; mixtures; phase boundary; P-H chart; thermodynamic tables; VLE data

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